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INVESTIGATIONS CONCERNING CUBAN BIRDS, WITH SPECIAL REFERENCE TO THEIR ECONOMIC STATUS, AND CONSIDERATION OF THOSE WHICH MIGHT BE DESIRABLE FOR INTRODUCTION INTO PUERTO RICO

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INTRODUCTION

The material for this paper was obtained during two short visits to Cuba during the summers of 1933 and 1934. On both trips the writer was accompanied by Mr. Virgilio Biaggi, Jr., who assisted in the work materially by the preparation of specimens and in other ways.

During the periods of both visits it proved impossible to use firearms for collecting, due to disturbed political conditions in the island. At first we feared we would have to give up any ideas of collecting, but that was before we had become acquainted with the great skill which many Cuban boys have developed with a slingshot or catapult. We found it possible by employing them to obtain almost any bird we wanted, and on occasion in embarrassingly large quantities.

ITINERARY

In 1933 we arrived at Santiago de Cuba early in the morning of June 30, and spent that day in the vicinity of Santiago as guests of Mr. G. C. Bucher, who gave us much valuable information, and showed us some interesting local birds, in addition to offering most generous hospitality.

July 1 we went by bus along the Carretera Central to Sancti Spiritus, observing many birds from the bus en route. We spent the day of July 2 at Sancti Spiritus observing birds, and with the aid of a local boy who was adept with a slingshot we obtained a number of specimens. Señor Raúl Guitart, a distinguished local naturalist and principal of the "Colegio Carlos de la Torre" was of great assistance to us in this town, and we took much pleasure in examining the collection of natural history specimens he is accumulating at this school.

July 3 we continued by bus along the Carretera Central to Havana, and on July 5 we continued by train thru Pinar del Río to Guane, in extreme western Cuba. Part of the province of Pinar del Río thru which we passed had been devastated by a hurricane three days previously, and in all that part of the island the streams were much swollen as a result of the hurricane rains. We reached Guane soon after noon, and immediately gathered up some local boys and set them collecting birds with slingshots. Towards evening they began bringing them in by the scores. The next morning the birds came in by hundreds instead of scores, and we had so many more birds than it would be possible to skin that we were forced to announce that no more would be accepted after noon. At that hour, in self defense, we were compelled to lock our doors to keep out the additional hundreds that kept arriving despite our announcement. Even so before the time came to take the night train to Pinar del Río we were able to skin only the cream of those we had accepted.

July 7 we went by car to the limestone sierra beyond Viñales, where we had an opportunity to witness an interesting method of catching birds alive, employed by birdcatchers who obtain cage bird for sale. They work with a very long, slender rod in three sections, easily assembled in the field. At the tip they attach a small twig dipped in bird lime. They sneak up behind a perching bird, and touch it on the wing with the bird lime. The bird immediately falls screaming to the ground, unable to fly, with the twig soaked in bird lime attached to its wing. Most of the smaller birds were too much glued up by the bird lime to serve as scientific specimens, but we obtained a trogon in fine condition by this method.

July 8 we returned by train to Havana. July 10 and 11 were spent in a bus trip from Havana back to Santiago. As the bus had frequent attacks of engine trouble it gave us chances for a number of unexpected stops where observations could be made. July 12 we sailed from Santiago for Puerto Rico.

The second short visit in 1934 we owed to a prolonged stop for the purpose of loading sugar at Caibarien made by a freighter on which we were travelling. Due to shallow water, boats loading at Caibarien are obliged to anchor near Cayo Francés, fourteen miles from the town of Caibarien and the Cuban mainland. Our boat, after skirting along the coast of Cayo Santa María, arrived at Cayo Francés the latter part of the morning of June 14. That afternoon we obtained permission to take our guns ashore on Cayo Francés, where we collected a few birds, but found the avifauna very meager. June

15 we went ashore at Caibarien, and the next day went by automobile to Havana, stopping at intervals for bird observations. We returned to Caibarien on June 18, and spent the 19th and most of the 20th working around that town. Boys brought us a few specimens there. We went back to the boat the evening of the 20th, and it sailed the afternoon of June 21, but not before we had opportunity to collect a few birds that came around the boat, including a Leach's Petrel. We observed a few other birds as the boat continued along the coast that afternoon.

On these two trips a total of sixty-seven species of birds were observed, and specimens of thirty-four species were obtained despite the prohibition of the use of firearms.

Economic Notes

The stomachs of most of the birds obtained were preserved, and later their contents were examined in an effort to learn something about the economic status of Cuban birds. The results of this scrutiny are given under the various species in the annotated list of birds. Very little has been published on the food habits and economic status of West Indian birds outside of Puerto Rico, so it seems desirable to record any bits of information that may be obtained upon the subject.

At the time of my visit to Guane that region was experiencing a severe infestation of cutworms. Apparently a great variety of birds were attracted by this abundant and easily available source of food, as cutworms were found in the stomachs of eleven species of birds collected at this time in amounts ranging from 6.3 to 90.5 per cent by bulk of their total food. It might be of interest to append a list of these species together with the percentage of total food which cutworms formed in each case:

1. *Sturnella magna hippocrepis*	90.5
2. *Mimus polyglottos orpheus*	85.0
3. *Falco sparverius sparvernoides*	68.0
4. *Agelaius humeralis*	55.0
5. *Ptiloxena atroviolacea*	45.0
6. *Mimocichla rubripes rubripes*	40.0
7. *Icterus hypomelas*	24.0
8. *Tolmarchus caudifasciatus*	14.1
9. *Saurothera merlini*	11.7
10. *Centrus superciliaris superciliaris*	8.8
11. *Colinus cubanensis*	6.3

Ptiloxena atroviolacea in an economically noteworthy bird, due both to the large proportion of cutworms eaten, and to the great

number of cattle ticks consumed, as many as fifty-eight being found in a single stomach. The possibilities of the value of this bird for introduction to other places should be considered.

Special attention is also called to *Saurothera merlini*. The stomachs of this species examined were jammed with an enormous number of large insects mostly of an injurious nature. One stomach contained among other items sixteen large tobacco-worms (*Protoparce sexta*). At that rate one *Saurothera* could save a tobacco grower many dollars in the course of a season. Many other birds discussed in the pages that follow show very valuable food habits.

Annotated List

1. *Podilymbus podiceps antillarum* Bangs. West Indian Pied-billed Grebe. Zaramagullón. One noted at Palacios July 5, 1933.

2. *Oceanodroma leucorhoa leucorhoa* (Vieillot). Leach's Petrel. On June 20 and 21, 1934, about eight were feeding around the S.S. "Almeria Lykes" while it was anchored half a mile off Cayo Francés. On the latter date a female was collected, constituting the first record of this species for Cuba, and one of the few records for the West Indies.

3. *Pelecanus occidentalis occidentalis* Linnaeus. West Indian Brown Pelican. Alcatraz. Seen at Santiago June 30, 1933; Cayo Francés June 14, 1934, and Caibarien June 20, 1934.

4. *Phalacrocorax auritus floridanus* (Audubon). Florida Cormorant. Corua. Common between Cayo Francés and Caibarien from June 14 to 20, 1934.

5. *Fregata magnificens rothschildi* Mathews. Man-o-war Bird. Rabihorcado. Noted at Santiago June 30 and July 12, 1933; Cayo Francés June 14 and 20, 1934; Caibarien June 16, 1934, and Matanzas June 16, 1934.

6. *Casmerodius albus egretta* (Gmelin). American Egret. Garzón. Two seen at Santiago July 12, 1933.

7. *Egretta thula thula* (Molina). Snowy Egret. Garza Blanca. One noted at Sábalo July 5, 1933, and one at Cascajal June 18, 1934.

8. *Hydranassa tricolor ruficollis* (Gosse). Louisiana Heron. Garza. One seen at Boca de Galafre July 5, and two at Santiago July 12, 1933.

9. *Florida caerulea caerulescens* (Latham). Southern Little Blue Heron. Garza. Common. Observed at the following localities: Santiago, Palma de Soriano, Bayamo, Santo Domingo, Manacas, Oceguera, Boca de Galafre, Cascajal, Jiguaní, and Matanzas.

10. *Butorides virescens maculatus* (Boddaert). West Indian Green Heron. Aguaita Caimán. Common. Recorded at Bayamo, Sancti Spiritus, Santo Domingo, Camagüey, Puerta de Golpe, Pinar del Río, San Juan, Sábalo and Oceguera.

11. *Dendrocygna arborea* (Linnaeus). West Indian Tree Duck. Yaguasa. One seen near Sabanicú July 1, 1933.

12. *Cathartes aura aura* (Linnaeus). Turkey Vulture. Aura. Abundant everywhere on the main island. Two seen on Cayo Francés June 14, 1934.

13. *Falco sparverius sparverioides* Vigors. Cuban Sparrow Hawk. Cernícalo. Common. Noted at many localities. Three were obtained at Guane July 6, 1933, and two at Caibarien June 20, 1934. This series of five shows specimens grading all the way between the typical rufous phase and the typical light phase. The three stomachs from Guane contained 68 per cent of cutworms; field crickets (*Gryllus assimilis*), 10 per cent; larvae of Carabid beetles, 10 per cent; large ground spiders, 7.3 per cent; and earwigs 4.7 per cent. These birds had eaten 56, 13 and 4 cutworms apiece.

14. *Colinus cubanensis* (G. R. Gray). Cuban Quail. Codorniz. Common in the savanna lands. Seen at Ciego de Avila, Sancti Spiritus, Placetas, Rincón, Salud, Sábalo, Pinar del Río, Guane, Candelaria and Jiguaní. A pair was obtained at Guane on July 6, 1933. Their stomachs contained 36 per cent of animal matter and 64 per cent of vegetable matter. The former consisted of 14 Geometrid larvae in one stomach, and a large cutworm, a Coreid bug and an *Exopthalmoides* weevil in the other. The vegetable matter consisted of small drupes, berries and seeds.

15. *Grus mexicanus nesiotes* Bangs and Zappey. Cuban Sandhill Crane. Grulla. One was seen near Ciego de Avila on July 1, 1933.

16. *Rallus elegans ramsdeni* Riley. Cuban King Rail. Martillo. The *martillo* was well known and said not to be rare in the vicinity of Guane. On July 6, 1933, boys brought me a male which they had obtained with a slingshot. This specimen shows the following measurements: wing 149.7; tail 56.9; culmen from base 62.0; tarsus 54.5 millimeters. Its stomach contained 2 large aquatic Coleoptera larvae; 2 Dytiscid beetles (*Thermoneces* sp.). 1 Hydrophilid beetle (*Hydrous tenebroides*), and 2 Lepidopterous larvae.

17. *Ionornis martinicus* (Linnaeus). Purple Gallinule. Gallareta Azul. In 1933 single birds were noted at Bayamo July 1, Pinar del Río July 5, and Paso Real July 8.

18. *Fulica* sp. A coot of some species was seen in a swamp at Contramaestre on July 1, 1933.

19. *Jacana spinosa violacea* (Cory). West Indian Jacana. Gallito. Observed in 1933 on July 1 at Contramaestre; on July 5 at Paso Real, San Juan and Sábalo; on July 7 at Pinar del Río; on July 8 at Pinar del Río, Las Ovas and Puerta de Golpe; and on July 10 at Matanzas. In 1934 seen June 16 at Manacas.

20. *Charadrius vociferus ternominatus* Bangs and Kennard. West Indian Killdeer. In 1933 two were observed June 30 at Santiago, ten July 7 at Pinar del Río, one July 8 at Víbora, and two were obtained July 6 at Guane. The species was observed June 18, 1934, at Cascajal and at Santo Domingo.

21. *Larus atricilla* Linnaeus. Laughing Gull. Gallego. Small numbers were seen around Cayo Francés and Caibarien from June 14 to 21, 1934, and on June 20 a fisherman at Caibarien brought me a living immature bird which he claimed he had just captured on one of the outlying keys. This specimen is now preserved in my collection. It was not large enough to have had any extended powers of flight, and is strong indication of the breeding of the Laughing Gull in this vicinity.

22. *Sterna dougallii dougallii* Montagu. Roseate Tern. Gaviota. One observed from a boat close to the shore of Cayo Santa María on June 14, 1934.

23. *Sterna fuscata fuscata* Linnaeus. Sooty Tern. Gaviota Monja. In 1934 three were observed off Cayo Santa María June 14; about one hundred off Cayo Francés on June 21, and twelve off Sagua the same day.

24. *Sterna albifrons antillarum* (Lesson). Least Tern. Two seen near Cayo Francés June 14, 1934, and two off Sagua June 21, 1934.

25. *Thalasseus maximus maximus* (Boddaert). Royal Tern. Gaviota. Two seen from a boat near the coast of Cayo Santa María June 14, 1934.

26. *Columba leucocephala* Linnaeus. White-crowned Pigeon. Paloma Cabeciblanca. Twenty were seen on Cayo Francés on June 14 and again on June 20, 1934.

27. *Zenaida aurita zenaida* (Bonaparte). Zenaida Dove. Sanjuanera. In 1933 single birds or pairs were noted at Bayamo July 1; Sabanacú July 1; Herradura July 5, and Jatibonico July 10.

28. *Zenaida asiatica asiatica* (Linnaeus.) White-winged Dove. Aliblanca. One seen at Santiago on June 30, and two at Bayamo on July 11, 1933.

29. *Zenaidura macroura macroura* (Linnaeus). Cuban Mourning Dove. Rabiche. Abundant and generally distributed on the main island, and five were seen on Cayo Francés on June 14, 1934.

30. *Columbigallina passerina insularis* Ridgway. Cuban Ground Dove. Tojosita. Common and generally distributed. A female was obtained at Sancti Spiritus July 2, 1933, and another at Guane July 5, 1933. It was noted that the former had the bill dusky, and the legs and feet light pink with black claws.

31. *Amazona leucocephala palmarum* Todd. Western Cuba Parrot. Cotorra. While travelling in a bus on the Carretera Central near Jatibonico on July 1, 1933 a flock of twelve parrots was noted perched on the limbs of a leafless tree close to the roadside; they did not take flight when the bus passed. A fair number of parrots were observed around Sancti Spiritus on July 2 and 10, 1933, and on the latter date one was obtained as a specimen.

32. *Aratinga euops* (Wagler). Cuban Paroquet. Periquito. At Sancti Spiritus on July 3, 1933, a man came in from the country on horseback with a cage containing about 100 paroquets to sell as cage birds. When I returned to the town a week later all but two had been sold; those I purchased for the sum of ten cents apiece to preserve as specimens. From many reports the species is approaching the point of extermination in many parts of Cuba.

33. *Coccyzus americanus americanus* (Linnaeus). Yellow-billed Cuckoo. One observed at Santiago on June 30, 1933, and one on Cayo Francés on June 14, 1934.

34. *Saurothera merlini* d'Orbigny. Cuban Lizard Cuckoo. Arriero. A female specimen was obtained at Sancti Spiritus on July 2, and two at Guane July 5, 1933. The species was also observed at Viñales, Pinar del Río, Placetas, and Caibarien. The specimen obtained at Sancti Spiritus contained an egg nearly ready to be laid. The three stomachs were jammed with so much food that it seemed surprising a stomach could hold so much. It was composed entirely of arthropods, mostly insects and their larvae. The greater part consisted of Lepidopterous larvae. One stomach from Guane contained 22 of them, of a great variety of form and size, ranging from 3 large Sphingid caterpillars to 2 small Geometrids. This stomach had also 4 green stinkings (*Nezara viridula*), 2 large brown stinkbugs (*Edessa* sp.), 3 cicadas, a bush cricket, and a small beetle; also a parasitic nematode worm and 3 pieces of gravel. Another stomach (also from Guane) contained 16 large larvae of the Tobacco Worm (*Protoparce sexta jamaicensis*); in ad-

dition this stomach contained 11 cutworms, a scorpion 35 millimeters in length, a Tenebrionid beetle, and a June beetle (*Phyllophaga* sp.). No agriculturist who had seen the contents of this stomach would ever want an *arriero* killed on his property! The stomach from Sancti Spiritus contained 5 cutworms, 1 *Nezara viridula,* and some unidentifiable insect fragments.

35. *Crotophaga ani* Linnaeus. Ani. Judío. Common. Observed at many localities. Specimens were brought in at Guane.

36. *Chordeiles minor gundlachii* Lawrence. Cuban Nighthawk. Querequeté. Three specimens were obtained at Guane on July 5 and 6, 1933. In addition the species was recorded at Jatibonico on July 1, Mendoza July 5, and Ciego de Avila July 10, 1933, and at Manacas June 18, 1934. The three stomachs contained exclusively insects, of which Cicadas formed 20 per cent, and the balance consisted of Coleoptera except for one Pentatomid bug (*Thyanta* sp.) amounting to 1.3 per cent. Small June Beetles (*Phytalus apicalis*) formed 37 per cent. Other beetles recognized were larger June Beetles (*Phyllophaga* sp.); manure beetles (*Ataenius* sp.); Bostrichidae (*Apate francisca*); Click Beetles (*Pyrophorus* sp.); green weevils (*Exopthalmoides* sp.), and Tenebrionidae.

37. *Tachornis phoenicobia yradii* (Lembeye). Cuban Palm Swift. Observed in small numbers in July 1933 at Jiguaní, Bayamo, Camagüey, Ciego de Avila, Jatibonico, Taco Taco, and Cascajal; and on June 16, 1934, at Manacas.

38. *Ricordia ricordii ricordii* (Gervais). Cuban Hummingbird. Observed at Bayamo July 1, 1933, Viñales July 7, 1933, and on Cayo Francés June 14, 1934, and two specimens were obtained at Guane July 6, 1933.

39. *Priotelus temnurus temnurus* (Temminck). Cuban Trogon. Tocoloro. One observed on a limestone hill near Viñales July 7, 1933; it was then captured for us by a birdcatcher with a long pole tipped with bird lime.

40. *Todus multicolor multicolor* Gould. Western Cuba Tody. Pedrera. Observed at Sancti Spiritus on July 2 and Viñales July 7, 1933. At Guane on July 5 and 6 large numbers were brought in, three of which were preserved as specimens. Their stomachs contained nothing but insect material. Small Lepidopterous larvae formed 46 per cent, Coleoptera 32 per cent, and small Diptera 22 per cent of the contents.

41. *Todus multicolor exilis* Barbour and Brooks. Eastern Cuba Tody. Three were noted near Santiago June 30, 1933. Their note

was a clacking *clippy-clippy-clip,* surprisingly different from that of the Puerto Rican bird I had just been hearing.

42. *Xiphidiopicus percussus percussus* (Temminck). Cuban Green Woodpecker. Carpintero Verde. At Sancti Spiritus on July 2, 1933, a pair was observed feeding young in a nesthole in a leguminous tree. The entrance was surprisingly small for the size of the bird. The male of this pair was collected with a slingshot. At Guane on July 5 and 6 many specimens were brought in. The species was observed at Cabaiguán on July 3, and Pinar del Río on July 7, 1933. On Cayo Francés June 14, 1934, one was collected at a nest hole in a dead tree in a mangrove swamp. The contents of 4 stomachs were examined. The three from the main island contained exclusively vegetable material, consisting mostly of small unidentified drupes, and also some splinters of wood, perhaps swallowed while excavating a nesting cavity. The stomach of the bird from Cayo Francés was greatly distended with a large ground lizard and one small seed.

43. *Centurus superciliaris superciliaris* Temminck. Cuban Ladder-backed Woodpecker. Carpintero Jabado. Observed at Matanzas on July 3 and at Pinar del Río July 7, 1933. At Guane on July 5 twenty were brought in by boys who had obtained them with slingshots. It was possible to save only two of these as specimens, but the stomach contents of six were examined, and found to consist of 57.2 per cent of animal matter and 42.8 of vegetable. Cutworms formed 8.8 per cent of the food; June Beetles (8 in one stomach and 9 in another) constituted 22.5 per cent; other Coleoptera and their larvae (including a Cerambycid beetle) formed 21 per cent. The vegetable matter consisted of the remains of fruits which it proved impossible to identify. The above evidence goes to prove that this bird does much good to offset its well known injurious habits of destroying cultivated fruits and growing corn.

44. *Colaptes chrysocaulosus chrysocaulosus* Gundlach. Cuban Flicker. Two of these rare birds seen near Bayamo on July 1, 1933.

45. *Nesoceleus fernandinae* (Vigors). Fernandina's Flicker. Carpintero Churroso. One seen along the Bayamo-Holguin Road on July 1, 1933.

46. *Tyrannus dominicensis dominicensis* (Gmelin). Gray Kingbird. Pitirre. Common and generally distributed on the main island; noted on Cayo Francés June 14, 1934. Several specimens were brought in at Guane July 6, 1933, but only one was saved as a specimen. Its stomach contained fragments of Coleoptera and gravel.

47. *Tolmarchus caudifasciatus* (d'Orbigny). Cuban Petchary. Observed at Pinar del Río and Viñales July 7, and at Camagüey July 11, 1933. At Guane on July 5 twenty-five were brought in. It was possible to save only two as specimens, but the stomach contents of seven were examined. One was empty; the others contained 75.3 per cent of animal matter and 24.7 per cent of vegetable. The animal matter consisted entirely of insects and their larvae, among which the following were recognized: Cutworms 14.1 per cent; crane flies 6.7 per cent; *Cryptocephalus* fleabeetles (*C. nigrocinctus* and other species) 10.8 per cent; Meloidae 6.6 per cent; miscellaneous Coleoptera 2.2 per cent, and a large cicada 13.6 per cent. The vegetable matter consisted mainly of drupes and other small fruits, among which were some of *Chalcus exotica*.

48. *Blacicus caribaeus* (d'Orbigny). Cuban Pewee. San Juanito. Abundant at Sancti Spiritus on July 2, 1933. Three families of young just out of the nest being fed by their parents were noted. A boy killed seven with a slingshot, all of which were preserved as specimens. The note was recorded in the field as "a whistled *wheet-wheet*". It was called San Juanito locally to distinguish it from the *Myiarchus*, which is known as Bobito. The seven stomachs contained exclusively insects. Hymenoptera dominated, forming 41.2 per cent, consisting of Eumenid bees (*Monobiella atrata*) in four stomachs, 36 per cent; and Halictid bees (*Agapostemon*) in two stomachs, 5.2 per cent. Lepidoptera came second with 20 per cent consisting of 6 medium-sized moths in one stomach and 1 in another. Diptera formed 12.9 per cent, including Syrphid and other flies. Coleoptera and Isoptera each formed 7.1 per cent, the latter consisting of some large black-winged Termites. Hemiptera constituted 6.0 per cent (a large green stinkbug). Odonata amounted to 5.7 per cent (small damselflies). Judging by this sample the species is of more or less neutral importance, consuming beneficial as well as injurious insects.

49. *Progne cryptoleuca* Baird. Cuban Martin. Golondrina Noted at Santiago, Sancti Spiritus, Manacas, Havana, Pinar del Río, Matanzas, Ciego de Avila, Caibarien, and on Cayo Francés. In the latter locality on June 14, 1934, ten were observed nesting in holes in dead trees in mangrove swamps. As the boat lay at anchor half a mile off Cayo Francés on June 21, 1934, one kept alighting on its flagpole until it was collected. Its stomach contained 2 damselflies, a small Coreid bug, fragments of Coleoptera, and other unidentifiable insects.

50. *Petrochelidon fulva cavicola* Barbour and Brooks. Cuban Cliff Swallow. Golondrina. Many were observed apparently nesting on high limestone cliffs near Viñales July 7, 1933. That same year the species was recorded at Santiago on June 30 and July 12; at Sancti Spiritus July 1–3; at Bacunagua and Palacios on July 5, and a male was obtained at Guane on July 6. At Caibarien June 15–20, 1934, these swallows were abundant, nesting under the eaves of houses in the town. An adult and a juvenile specimen were obtained there on June 20. Two stomachs contained nothing but finely comminuted Diptera and Coleoptera.

51. *Corvus nasicus* Temminck. Cuban Crow. Cao Montero. A pair was seen near Esperanza on July 3, 1933.

52. *Mimus polyglottos orpheus* (Linnaeus). Cuban Mockingbird. Sinsonte. Abundant and widely distributed. A single mockingbird heard singing on Cayo Francés June 14, 1934, may have been this species. At Guane on July 6, 1933, many adults and nestlings were brought in, but it was possible to preserve only one adult as a specimen. Its stomach contained 11 cutworms (85 per cent) and 1 drupe.

53. *Mimocichla rubripes rubripes* (Temminck). Western Cuba Thrush. Zorzal Real. Ten were seen at Sancti Spiritus on July 2, 1933. Several were brought in at Guane on July 5, 1933, one of which was preserved as a specimen. A flock of six was seen at Remedios on June 16, 1934. Two stomachs from Guane contained 90 per cent of insects and 10 per cent of fruit. Cutworms amounted to 40 per cent. One stomach contained 3 large Staphylinid beetles.

54. *Polioptila lembeyei* (Gundlach). Cuban Gnatcatcher. Sinsontillo. On July 2, 1933, my friend Mr. G. C. Bucher of Santiago took us to a place near the shore of Níspero Bay, east of Santiago, where we observed two of these little birds singing their sprightly song in the dry brushy coastal growth. The birds flitted about actively, and when singing perched on rather conspicuous perches in the bushes, but soon moved on to another spot to continue their song. Mr. Bucher tells me that the species is locally very common in this region.

55. *Vireo calidris barbatula* (Cabanis). Black-whiskered Vireo. Bien-te-veo. In 1933 observed at Santiago, Cobre, Sancti Spiritus, Guane, and Viñales; and in 1934 at Caibarien. Several were brought in at Guane, and one was saved as a specimen. It had eaten some small red berries.

56. *Vireo gundlachii* Lembeye. Gundlach's Vireo. Juan-chiví. In 1933 noted at Sancti Spiritus July 2, Guane July 6, and Viñales

July 7. A specimen was obtained at Guane. Its stomach contained two rather small cicadas, a berry, and a drupe. On Cayo Francés June 14, 1934, two were observed, one of which was secured, but it was too much damaged by the shot to save as a specimen.

57. *Passer domesticus domesticus* (Linnaeus). English Sparrow. Common in cities and towns at least as far east as Ciego de Avila. Other towns in which it was noted as being common are Guane, Pinar del Río, Havana, Sancti Spiritus and Caibarien.

58. *Agelaius humeralis* (Vigors). Cuban Red-winged Blackbird. Mayito. In 1933 observed at Sancti Spiritus July 2; Sábalo July 5; Guane July 6; and Bacunagua July 8 (flock of 200), and in 1934 at Remedios and Cascajal on June 16. Four were brought in at Guane. Two stomachs contained cutworms 55 per cent and grasshoppers 45 per cent.

59. *Icterus hypomelas* (Bonaparte). Cuban Oriole. Solibio. Common. At Sancti Spiritus on July 2, 1933, a pair was observed feeding a family of three young scarcely able to fly. One of the young was collected with a slingshot. At Guane on July 5, 1933, twenty were brought in, in all plumages, including many nestlings. Three of the Guane birds were preserved as specimens. In addition to the localities mentioned, Orioles were observed at Holguin July 1, Viñales and Pinar del Río July 7; Bacunagua July 8, 1933; Taguayabón June 16, and Santa Clara June 18, 1934. Four stomachs contained 76.2 per cent of Lepidopterous larvae (24 per cent being cutworms, 17.5 per cent Pyralids, and the rest miscellaneous); 12.5 per cent of other insect remains; 7.5 per cent of white eggshell; and 3.8 per cent of minute seeds.

60. *Holoquiscalus jamaicensis caribaeus* Todd. Western Cuba Wedge-tailed Grackle. Chinchiguaco. Observed in 1933 at Colón on July 3, Rincón July 5, San Francisco on July 10.

61. *Holoquiscalus jamaicensis gundlachii* (Cassin). Eastern Cuba Wedge-tailed Grackle. Observed at Baire, Bayamo, Holguin and Ciego de Avila on July 1, 1933. On June 14, 1934, a female was collected from a flock of ten on Cayo Francés. It had eaten some refuse from fish being cleaned by some of the inhabitants near the shore.

62. *Ptiloxena atroviolacea* (d'Orbigny). Cuban Grackle. Totí. Common. Observed in 1933 at Palma Soriano, Sancti Spiritus, Esperanza, Guane, Viñales, Pinar del Río, Candelaria and San Francisco; and in 1934 at Remedios, Cama Juaní and Santa Clara. Two specimens were preserved at Guane on July 5, 1933. Three

stomachs from that locality contained 72 per cent of animal matter and 18 per cent of vegetable matter. All three stomachs contained cattle ticks which were identified by the U. S. Bureau of Entomology as *Boophilus annulatus australis*. One was found in one stomach, six in another, and fifty-eight in the third; together they constituted 16.6 per cent of the food. All three stomachs also contained cutworms (seven, twelve, and sixteen), forming 45 per cent of the food. A *Diaprepes* weevil and some Coleopterous larvae formed the balance of the animal material. The vegetable matter consisted of some unidentifiable fruits. Judging by the large numbers of cattle ticks and cutworms eaten, this species appears to be highly beneficial.

63. *Sturnella magna hippocrepis* (Wagler). Cuban Meadowlark. Sabanero. Abundant throughout the pasture and savanna lands. The song is very loud, resembling that of *S. neglecta* somewhat in that respect, but otherwise more like that of *S. magna magna*. Six were brought in at Guane on July 6, of which two were preserved as specimens. Eleven cutworms in one stomach and twenty-four in the other formed 90.5 per cent of the food. The balance was composed of a cockroach, a weevil, and two hard black seeds.

64. *Spindalis pretrei* (Lesson). Cuban Spindalis. Cabrero. At Viñales on July 7, 1933, a male was observed singing in rank vegetation by a stream. The song was recorded in the field as a wiry *swee-swee-sweet-sweester*, a little louder and not quite so high pitched as the song of *S. portoricensis*.

65. *Tiaris olivacea olivacea* (Linnaeus). Yellow-faced Grassquit. Cencerinico in Oriente; Barbito in Santa Clara. Common and generally distributed. Specimens were obtained at Sancti Spiritus July 2, 1933, and at Guane July 6, 1933. Stomachs contained small seeds, mainly leguminous.

66. *Tiaris canora* (Gmelin). Melodious Grassquit. Tomeguin. In 1933 one was noted at Holguin on July 1, and on July 5 at Guane six were brought in, three of which were preserved as specimens.

67. *Melopyrrha nigra* (Linnaeus). Cuban Black Finch. Negrito. Eight were brought in and two preserved as specimens at Guane on July 5, 1933. The stomachs contained small seeds and sand for grinding purposes.

Remarks on the Introduction of Cuban Birds Into Puerto Rico

In general the writer does not approve of introducing birds or other animals from one place to another. In many cases such introductions have been followed by sad consequences, witness the

introduction of the mongoose into the West Indies, of the English Sparrow and Starling into the United States, of the Mynah into Hawaii, and of Rabbits into Australia. Animals which may be harmless or actually beneficial in their natural homes, when transplanted to a new region where different biological factors are involved, and where they do not have their natural enemies to keep their numbers within bounds, may become excessively abundant and devlop new and extremely injurious habits. However, there are a few species which it is scarcely believable could become injurious, and which might be very desirable for introduction purposes, a real need being felt for birds which occupy certain particular niches in the economic scheme.

One important fact must be borne in mind in connection with any attempted bird introductions into Puerto Rico. Due to the prevalence of the mongoose here the introduction of any ground-nesting birds would be extremely inadvisable, as the mongoose would exterminate them before they ever had a chance to become established. That has already happened in the case of the Quail, which were introduced a short time before the mongoose was brought in. This state of affairs is much to be regretted, as there are many useful and attractive birds which would be most desirable for introduction except for this condition.

In the lines which follow discussion will be found of a number of species of Cuban birds which have been mentioned in connection with various projects for the introduction of birds into Puerto Rico, or which occur to the writer as being possibly desirable for introduction. In connection with each, reasons are given to show why the bird in question might be desirable or undesirable, and a suggestion of some of the obstacles which might have to be overcome in connection with the introduction of some of them.

Phoenicopterus ruber Linnaeus. Flamingo. Flamenco. Many suggestions have been made for the introduction of the Flamingo, but that would be highly impracticable. Flamingoes once occurred here, but became locally extinct many years ago due to persecution, as they cannot endure densely inhabited regions. They cannot live long at fresh water lakes due to lack of the small molluscs which constitute their entire natural food, and which occur only in saline mudflats. Suitable areas for the Flamingo in Puerto Rico are very limited, and too much frequented by man.

Aix sponsa (Linnaeus). Wood Duck. Huyuyu. A most beautiful and gorgeously colored small duck which is highly ornamental as

well as of value for its flesh. It is not injurious in its food habits, feeding mostly on insects, with the addition of a few small fish, frogs and snails, and a great variety of vegetable food, including aquatic plants, and various fruits and seeds found near the water. It inhabits particularly streams the banks of which are wooded, and prefers sluggish streams to those which are swiftly running. It would probably suffer but little from the mongoose, as it nests in hollow trees far above the ground. It occurs in the southern United States as well as in Cuba, and is much more common on the continent.

Cathartes aura aura (Linnaeus). Turkey Vulture. Aura. This species has already been introduced from Cuba into Puerto Rico. The introduction took place many years ago, but as yet the Puerto Rican range of this useful carrion-eating bird is restricted to the southwestern part of the island.

Jacana spinosa violacea (Cory). West Indian Jácana. Gallito. This brilliantly colored little bird has toes so long and slender that it can walk over the surface of water which has even a slight amount of aquatic vegetation, and thus gives the impression of actually walking on the water. In Cuba it occurs commonly on almost every lake and pond, even on small roadside pools, so that it forms a conspicuous feature of the avifauna. There are an abundance of places in Puerto Rico where this bird should thrive, and it lays its eggs on the leaves of water plants in places difficult for the mongoose to reach. Birds collected in Jamaica and the Dominican Republic by the writer had consumed nothing but insects, evidence that the species is beneficial in its habits. It appears to be a desirable species for introduction.

Zenaidura macroura macroura (Linnaeus). Cuban Mourning Dove. Rabiche. This dove is extremely abundant in Cuba, despite constant persecution. It is able to maintain its abundance despite intensive cultivation and constant hunting better than any of the other native pigeons. For this reason it would seem to be a desirable bird for introduction to Puerto Rico, where game birds are scarce. It nests in trees well out of reach of the mongoose.

Tyto perlata furcata (Temminck). Cuban Barn Owl. Lechuza. This large owl is found everywhere in Cuba, around farmyards, church towers, limestone cliffs and caves, and in many other situations. Its principal food consists of rats, but it must be admitted that it does consume some poultry and small birds. On the whole it is much more beneficial than injurious, and its introduction into Puerto Rico would probably prove to be of value.

Priotelus temnurus temnurus (Temminck). Cuban Trogon. Tocoloro. "The most beautiful bird in the world", as the Cubans call this bird, occurs commonly in Cuban thickets and woodlands, where it attracts much attention from its gorgeous plumage and its tameness. The eggs are laid in abandoned woodpecker holes, securely out of reach of the marauding mongoose. Its food apparently consists mainly of insects mixed with some wild fruits. This, or other trogons, would be a great attraction to visitors, and probably in the main beneficial to agriculture.

Tachornis phoenicobia yradii (Lembeye). Cuban Palm Swift. Golondrina or Vencejo. These little swifts live in colonies in clumps of palm trees which dot the savanna lands in Cuba. They are exclusively insectivorous, and highly beneficial. Their introduction into Puerto Rico should prove highly beneficial. The chief obstacle to their introduction would be the problem of catching a sufficient number at one time, and then getting them to Puerto Rico very expeditiously. As their food consists entirely of insects captured on the wing it is impossible to keep them long in captivity. They could perhaps be captured by dropping a large net over a nesting colony at night, and then the birds could be transported by airplane to Puerto Rico.

Myiadestes elizabeth elizabeth (Lembeye). Cuban Solitaire. Ruiseñor. This bird is one of the finest songsters in the western hemisphere, and well deserves the name of "nightingale" from its flutelike notes. It seems strange that Puerto Rico should have no Solitaire, as each of the Greater Antilles except Puerto Rico, and even each of the Lesser Antilles boasting of any high mountains, has a form of Solitaire. They are birds of high mountain forests, and those of El Yunque and other high mountains in the central part of the island seem admirably adapted for their needs. They would prove a great attraction to visitors at the park at El Yunque and at other places. Their introduction could not help but be beneficial, and the birds may be easily obtained from bird catchers in Cuba.

Ptiloxena atroviolacea (d'Orbigny). Cuban Grackle. Toti. Chocholí. The beneficial habits of this bird in consuming cutworms, ticks and other injurious arthropods have been elaborated upon earlier in this paper. Catching and transporting these birds should constitute no great problem, and they should not fall an easy prey to the mongoose. The only doubt that might be entertained about

their introduction is that there might be some danger of our native Grackle (*Holoquiscalus niger brachypterus*) being adversely affected by competition with the imported bird, but this seems hardly likely, as *Ptiloxena* and *Holoquiscalus* get along very well together in Cuba, and indeed are frequently seen flocking together.

SUPPLEMENTARY ACCOUNT OF THE BIRDS OF THE VIRGIN ISLANDS, INCLUDING CULEBRA AND ADJACENT ISLETS PERTAINING TO PUERTO RICO, WITH NOTES ON THEIR FOOD HABITS

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INTRODUCTION

This paper is intended as a supplement to my "Bird Records from the Virgin Islands", published in the Journal of the Department of Agriculture of Porto Rico, Vol. XIV, no. 3 (July, 1930). Since that paper was published it has been my privilege to continue ornithological observations in some of the islands previously visited, and to extend my investigations to a number of additional islands, some of which had not previously been visited by an ornithologist. Reports on three small but important collections of birds from St. Croix generously presented by Mr. Harry A. Beatty of that island are also included in this paper.

ITINERARIES

In 1931 a short visit was made to St. Thomas and St. Croix en route to other islands on June 16, and on the return trip the period from August 12 to 15 was spent on St. Thomas. During this short stay paroquets were obtained.

In 1933 and 1934, with Mr. Angel Biaggi as assistant, a short collecting trip was made to St. Thomas and some of the British Virgin Islands. We arrived in St. Thomas very early in the morning of December 23, and worked there until the afternoon of December 27, when we went by motor launch to Tortola, where we stayed for a week, except for a half day visit which we made on December 28 to Beef Island, and the day of January 1, which we spent on Jost van Dyke. On this trip we also passed close enough to Great Thatch Island to make some bird observations. Neither Beef Island nor Jost van Dyke had previously received a visit from an ornithologist. Early in the morning of January 4 we left by sloop for Puerto Rico, stopping for a short stay in St. Thomas that afternoon, and arriving in Puerto Rico the next day.

In 1934 and 1935, accompanied by Mr. Robustino Biaggi as assistant, some collecting was done in Culebra and adjacent islets.

We arrived at Culebra on the night of December 25, and stayed there until the morning of January 4. During this time we made one-day trips by sloop on December 28 to Louis Peña, on December 30 to Cayo Norte, and on January 1 to Culebrita. No ornithologist had previously visited Cayo Norte.

In the summer of 1935, with Mr. Virgilio Biaggi, Jr., as assistant, the period from June 14 to 19 was spent in St. Thomas while waiting for a boat to other islands. During this time we did some collecting on St. Thomas, and on June 18 made a visit to the nearby islet of Little Saba where there is an enormous nesting colony of Zenaida Doves, and several species of terns also apparently nest. Upon our return from the southern islands we made another very brief visit to St. Croix and St. Thomas on August 14.

Plan of Work

In the annotated list of the birds records of all species which were not previously recorded by the writer from the island in question are given. Additional records of birds seen or captured which were listed in the previous paper from islands visited before that paper was written are given from those islands only in the case of rare species, or when additional information of importance concerning that species in the island previously visited has been secured. All species seen or collected on islands not previously visited by the writer are recorded in this paper, and mention of all the specimens from St. Croix received from Mr. Beatty. Notes have been included whenever possible on the results of analyses of stomach contents of the birds collected. Brief descriptions of islands not previously visited are given, and at the end will be found an appendix giving a complete list of all the birds known to occur in the Virgin Islands, including Vieques, Culebra and other smaller islands to the east of Puerto Rico, with a statement as to which island each bird is known to inhabit or visit.

In this connection it might be in order to mention the small collection of birds in the St. Thomas High School, which it was my privilege to inspect in June, 1935. This collection, which is aged and musty and of unknown origin, evidently consists in the main of specimens from St. Thomas, but none of the specimens are accompanied by data, and a few are evidently from St. Croix or even from places outside the Virgin Islands; so these specimens cannot be considered as constituting valid records for St. Thomas. This is regrettable, as there are in the collection a number of specimens

which would be valuable as records or for purposes of comparison if it could be proved that they had come from St. Thomas. Among these I might make mention of specimens of *Fulica caribaea, Rallus longirostris* subsp., *Haematopus palliatus, Erismatura jamaicensis jamaicensis, Dendrocygna arborea, Saurothera vieilloti, Colinus virginianus,* and two specimens of *Spatula clypeata.*

Brief Descriptions of Islands not Previously Visited

Culebra is an irregularly shaped island twenty miles east of Puerto Rico. It is about six miles long, and three miles wide at the widest point. Its surface is mostly hilly, with the highest peak rising to 650 feet. On the south coast there is a deep indentation known as Bahia Honda, the shores of which have in most places a narrow fringe of mangroves. Some of the hills are covered with a xerophytic type of forest. There are no permanent streams on the island. In the northwest part of the island there is a large brackish water lagoon known as Flamenco Lagoon. At times waterbirds are said to abound there, but very few were present at the time of our visit. The town is situated at the base of the peninsula which forms the southern shore of Bahia Honda. The island possesses 847 inhabitants.

Louis Peña, sometimes known as Southwest Cay, is situated about a mile south of Culebra. It is slightly over a mile in length, and has a wooded hill 476 feet in height. The island is mostly grown to brush, but in a few places on the hills there are some high woods of a xerophytic type. There is a slight bit of level land and a tiny brackish lagoon in the neck of land connecting the southern knob with the main part of the island. The coasts are for the most part very rocky. Two families inhabit the island to care for a few cattle which are raised there.

Culebrita, about a mile in length, is situated less than a mile from the eastern and of Culebra. It has a trihedral shape, with three prongs extending into the ocean. At the center is a hill 305 feet in height capped by a lighthouse. Near the tip of the southwest prong is an extensive brackish lagoon where some ducks occur, and there is another very small lagoon nearer the center of the island. The island is almost completely covered with dense brush of a spiny nature, with very few paths, so we negotiated the three prongs with great difficulty. On the southern prong there are some abrupt rocky cliffs, the vicinity of which is frequented by Oystercatchers.

Cayo Norte (also known as Northeast Cay) is about a mile off the north coast of Culebra, and a little over a mile northwest of Culebrita. It is slightly over a mile in length, and is mostly covered with dry scrub, which becomes high xerophytic woodland on the highland, which attains an elevation of 338 feet. There is a small brackish lagoon much grown with mangroves near the south coast. The northeast part of the island is rocky headland. The island is the property of Don Eduardo Padró and his brothers and sister. He and one of his brothers, and a family of negro squatters live on the island. He gave us a very hearty welcome to the island and assisted us greatly during the day we were there, which he was able to do particularly well due to his intimate knowledge of the birds of his island.

Jost van Dyke is a hilly island about four miles in length and one and a quarter miles in width situated about three miles northwest of Tortola. There are three bays on the south coast, these, in order from west to east, being White Bay, Great Harbour (where the "town" of perhaps a dozen houses is situated), and Plain Bay. We went to Jost van Dyke by motor launch from Tortola, and went ashore at each of the three bays, working the country in all directions from each landing place. Near White Bay there is a brackish lagoon several acres in extent, and near Plain Bay there are two much smaller ones. Near Great Harbour there is a dense mangrove swamp. The island is so hilly that there is practically no level land on it. The highest peak attains an elevation of 1,070 feet above sea level. There are about two hundred inhabitants (all black) on the island. They have made numerous clearings and small plantations, but the larger part of the island is covered with brush.

Great Thatch Island is a long, narrow, brush-covered island lying directly west of Tortola. It is about two miles long, with a precipitous shoreline; its highest point is 613 feet above sea level. It is uninhabited at present, although a few people have lived there at various times in the past. We had no opportunity to go ashore on it, but on several occasions passed so close to its shores in small boats that it was possible to make observations even of small land birds.

Beef Island is an island slightly over two and a half miles in length situated directly east of Tortola and separated from it by a narrow strait. The western part of the island is rather low, partially cultivated, and has three lagoons which contain slightly

brackish water. The two largest are sufficiently fresh to permit of the growth of *Naias* and other fresh-water pondweeds, though brackish enough to have a few mangroves growing along their banks. Ducks, coots, and grebes occurred in one. The third is more brackish, and has a denser growth of mangroves. The eastern part of the island is more rugged, and boasts of a hill 660 feet in height. The island has two inhabitants.

Remarks on the Avifauna

The birds of the Virgin Islands, despite their great similarity to those of Puerto Rico in many respects, also show striking affinities to those of the Lesser Antilles, despite the fact that they are removed from the Lesser Antilles by the broad Anegada Channel eighty miles or more in width, whereas the nearer of this group of islands are very close to and plainly visible from Puerto Rico. Most of the Puerto Rican birds which reach the Virgin Islands are those in which either the identical or a closely related form extends into the Lesser Antilles, whereas such typically Lesser Antillean forms as *Orthorhynchos exilis exilis, Sericotes holosericeus holosericeus* and *Elaenia martinica riisii* abound in the Virgin Islands, and either do not reach Puerto Rico at all, or are very scarce and found only in extreme eastern Puerto Rico. Therefore the avifauna of the Virgin Islands may be regarded as intermediate between Lesser Antillean and Greater Antillean, but approaching more closely to the former. Only four forms of birds are peculiar to the Virgin Islands, namely *Amazona vittata gracilipes* of Culebra (now extinct); *Gymnasio nudipes newtoni* of St. Thomas, St. Jan, St. Croix and possibly Vieques (likewise now extinct); *Coereba portoricensis sanctithomae* of practically all the Virgin Islands except St. Croix; and *Coereba newtoni* of St. Croix.

The total list of birds, including migrants and accidental visitors, definitely recorded from the Virgin Islands adds up to 133 forms. This is a rather meagre avifauna, but it is to be expected, due to the small size of the islands, and their remoteness from continental land masses. The absence of certain genera which occur commonly in both the Greater and Lesser Antilles from these islands (except in some cases Vieques, which due to its close proximity to Puerto Rico boasts of more of the characteristic birds of Puerto Rico than any other of the islands under discussion) is noteworthy. Among such

genera might be mentioned *Myiarchus, Blacicus, Holoquiscalus, Tanagra* and *Loxigilla.*

ANNOTATED LIST

Podilymbus podiceps antillarum Bangs
Antillean Grebe

On December 28, 1933 an adult was observed by its nest on the slightly brackish lagoon at Beef Island. The nest was a floating affair made of fresh green pondweeds. Mr. H. C. Beatty has sent me an adult female in breeding plumage with black throat and band on bill which he obtained at South Gate Pond, St. Croix, on December 31, 1933. It exhibits the following measurements: Culmen from base 26.8; exposed culmen 21.5; wing 122.4; tarsus 36.9 millimeters. The measurements are similar to those of North American birds, but the colors can be matched closely by breeding birds from Puerto Rico and Antigua in my collection.

Pelecanus occidentalis occidentalis Linnaeus
Brown Pelican

A few observed on Culebra December 27, 1934, to January 3, 1935; on Louis Peña December 28, 1934; Culebrita January 1, 1935; Cayo Norte December 30, 1934, and Beef Island December 28, 1933. Common at Great Thatch Island January 1, 1934, and on Jost van Dyke the same day Pelicans were remarkably abundant, perhaps 300 being noted, mostly adult birds with white heads and chestnut red necks.

Sula leucogaster leucogaster (Boddaert)
Brown Booby

Seen at Culebra January 5, 1934, and December 27, 1934, to January 1, 1935; at Louis Peña December 28, 1934; Great Thatch Island January 1, 1934; Jost van Dyke January 1, 1934, and Little Saba June 18, 1935.

Fragata magnificens rothschildi Mathews
Man-o-war Bird

One seen at Culebra January 6, 1934, and another December 27, 1934; one at Culebrita January 1, 1935; three at Jost van Dyke January 1, 1934, and one at Beef Island December 28, 1933.

Ardea herodias herodias Linnaeus
Great Blue Heron

Individuals were noted at Culebra on December 27 and 28, 1934, and on Culebrita January 1, 1935. There is some uncertainty as to whether birds occurring in this region are migrants from North America or a resident West Indian form. Although I have no specimens from North America at hand for comparison, it might not be amiss in this connection to present the measurements of specimens from the West Indies in my collection:

	Wing	Tail	Exposed Culmen	Tarsus
No. 551, female, Great Bay, St. Martin, Dec. 24, 1927	425.6	165.7	125.3	150.5
No. 660, male, Añasco, Puerto Rico	471.5	183.3	143.0	180.1
No. 1507, Cabo Rojo, Puerto Rico, female	433.7	.....	123.1	154.2

The above measurements are expressed in millimeters.

Florida caerulea caerulescens (Latham)
Southern Little Blue Heron

Common on Culebra December 26, 1934, to January 3, 1935. A bird in white plumage was collected on December 26. Its stomach contained 9 fiddler crabs (*Uca pugnax rapax*). One in adult blue plumage was collected at a tiny lagoon on Louis Peña December 28, 1934, and its stomach was found to contain a crab of the same species. Two were observed on Cayo Norte December 28, 1934, and nineteen on Jost van Dyke January 1, 1934.

Butorides virescens maculatus (Boddaert)
West Indian Green Heron

Rather scarce on Culebra, two being seen on December 29, 1934, and three on January 3, 1935. One was noted on Culebrita January 1, 1935, and two on Cayo Norte December 30, 1934. Six were seen on Jost van Dyke January 1, 1934.

Casmerodius albus egretta (Gmelin)
American Egret

One was shot at Mosquito Bay, St. Thomas, on June 17, 1935, but it was impossible to recover the bird.

Nyctanassa violacea violacea (Linnaeus)
Yellow-crowned Night Heron

A few immature birds were observed in mangrove swamps on Culebra December 31, 1934, and January 3, 1935.

Dafila bahamensis bahamensis (Linnaeus)
Bahama Duck

A flock of twelve was seen at the lagoon on Culebrita January 1, 1935. On January 1, 1934 twenty-five were noted at three small brackish ponds on Jost van Dyke, and a male was collected. Its stomach contained *Persicaria* seeds and a little sand. On December 28, 1933 a flock of twenty was observed at the lagoon on Beef Island. One was seen at a lagoon on the south coast of St. Thomas on June 17, 1935, and another the next day on Little Saba island.

Nyroca affinis (Eyton)
Lesser Scaup Duck

A male and two females were noted on Flamenco Lagoon, Culebra, on December 27, 1934. Mr. Beatty sent me a female obtained on South Gate Pond, St. Croix, March 26, 1933.

Erismatura jamaicensis jamaicensis (Gmelin)
West Indian Ruddy Duck

Mr. Beatty forwarded a male in breeding plumage (now No. 1157 in my collection) which he obtained on South Gate Pond, St. Croix on August 28, 1933. It shows the following measurements: Culmen 40.5; breadth of bill at widest part 23.6; wing (arc) 133.4; wing (flat) 138.7; tarsus 28.4 millimeters.

Buteo jamaicensis jamaicensis (Gmelin)
West Indian Red-tailed Hawk

One was observed at the east and of Culebra December 30, 1934, and one on Cayo Norte the same day. On Jost van Dyke the species was not actually seen, but was accurately described to me by residents.

Falco columbarius columbarius Linnaeus
Pigeon Hawk

One was shot but not recovered in the eastern part of St. Thomas on December 24, 1933.

Falco sparverius loquaculus (Riley)
Puerto Rican Sparrow Hawk

Abundant on Culebra and Louis Peña; very scarce on Cayo Norte and Culebrita. On Cayo Norte, where one was seen on December 30, 1934, Don Eduardo Padró assured me that only one pair existed. One was seen on Culebrita on January 1, 1935. A female was collected on Culebra on December 26, 1934, and another female ou Louis Peña on December 28, 1934. The latter had eaten 2 *Sphaerodactylus* lizards and a *Schistocerca* grasshopper. One was collected on Jost van Dyke January 1, 1934. Its stomach contained 2 mole crickets (*Scapteriscus vicinus*), and 2 rather large spiders. The stomach from Culebra contained 5 field crickets (*Gryllus assimilis*), 82 per cent; 6 caterpillars (3 of them Pyralidae), 10 per cent; fragments of fur and skin of a mouse, 8 per cent. A Sparrow Hawk was noted on St. Thomas on June 16, 1933.

Rallus longirostris subsp.
Clapper Rail

Many were heard in the mangroves on Culebra on December 26 and 29, 1934, and on the former date a female was collected. Mr. Beatty has sent me a male which he collected at Krause Lagoon, St. Croix, on April 13, 1935.

Porzana carolina (Linnaeus)
Sora Rail

A male was collected on Tortola, in the mangroves in a lagoon at Brandywine Bay on December 31, 1933. Its stomach contained comminuted Hemiptera (apparently *Zaitha anura*), 65 per cent; and seeds of *Persicaria*, 35 per cent.

Gallinula chloropus portoricensis Danforth
Antillean Gallinule

Two were noted in a small mangrove swamp on Cayo Norte December 30, 1934. On St. Thomas eight were observed at some mangrove bordered lagoons near the east end of the island on December 24, 1934, and a female (No. 1042) was collected. Its stomach contained the leaves of pondweed and sand. Eighteen were noted on Jost van Dyke January 1, 1934; and fifteen at Brandywine Bay, Tortola December 31, 1933, and a few at the lagoon on Beef Island December 28, 1933. Mr. Beatty has forwarded three specimens from St. Croix, a female (No. 1153) taken at William Pond November 12, 1933; another (No. 1154) from South Gate Pond

December 31, 1933, and a half-grown young one (No. 1155) from William Pond April 6, 1934. The measurements of the three adult specimens follow, expressed in millimeters:

	Wing (arc)	Wing (flat)	Culmen with frontal shield	Tarsus	Bill from gape	Width of frontal shield	Tail
Female, No. 1042.....	158.8	163.5	45.3	46.4	28.8	14.6	.....
Female, No. 1153.....	150.0	152.3	46.1	51.7	28.0	15.5	69.1
Female, No. 1154.....	173.3	177.8	44.0	52.6	28.7	13.7	72.3

Fulica americana americana Gmelin
American Coot

The coots of St. Croix are somewhat confusing. Mr. Beatty has sent me eight specimens from there. Of these one is definitely *F. americana.* The rest have been identified as *F. caribaea,* but two of them appear to be intermediate between the two species, having a small amount of red at the top of the frontal shield, which, however, dries wrinkled, whereas the skin on the frontal shields of *F. americana* dries smooth. The specimen which is unquestionably *F. americana* (No. 1152) is a male secured on South Gate Pond April 21, 1934, and shows the following measurements: Wing (arc) 195.6; wing (flat) 202.0; tail 54.3; culmen with frontal shield 49.8; depth of bill at base 17.2; width of frontal plate 9.2; length of frontal plate 15.6; tarsus 59.6 millimeters. The frontal shield is less swollen than in specimens of *F. a. grenadensis* from Jamaica in my collection, and the measurements in general are greater, so I am listing the bird, at least provisionally, as *F. a. americana.*

Fulica caribaea Ridgway
Caribbean Coot

Mention has been made under the preceding species of the confusion existing regarding the coots of St. Croix. Measurements are herewith appended of the seven specimens listed as *F. caribaea* forwarded by Mr. Beatty. The two specimens which exhibit some characteristics of *F. americana* are numbers 1068 and 1069; these were submitted to Dr. Alexander Wetmore for examination, and pronounced by him to be *F. caribaea.* The other five specimens are thoroughly typical specimens of *F. caribaea.* The measurements are expressed in milimeters:

Specimen	Wing (arc)	Wing (flat)	Tail	Culmen with frontal shield	Depth of bill at base	Length of frontal plate	Width of frontal plate	Tarsus
No. 1147, male, South Gate Pond, February 3, 1934	... 183.5	193.5	49.6	54.9	18.0	19.4	10.8	59.5
No. 1149, male, South Gate Pond, February 3, 1934	186.7	191.0	54.1	53.0	17.0	20.4	11.5	57.5
No. 1151, female, South Gate Pond, April 21, 1934	171.0	180.5	47.2	45.8	15.1	13.7	9.4	55.7
No. 1150, female South Gate Pond, March 23, 1934	164.0	171.5	50.6	50.0	15.2	18.5	9.7	51.6
No. 1148, female, Rust-up-twist Pond, December 31, 1933	168.0	178.0	51.8	51.5	14.8	22.0	11.0	56.5
No. 1068, Sex? South Gate Pond, March 26, 1933	172.6	181.0	48.0	47.4	16.3	17.8	9.9	51.9
No. 1069, Sex? South Gate Pond, March 26, 1933	184.8	191.0	52.0	46.8	16.5	16.3	8.8	52.4

A coot apparently of this species was noted at White Bay on Jost van Dyke January 1, 1934, and ten on the brackish lagoon on Beef Island December 28, 1933. One of the latter was shot, but it proved impossible to recover the specimen.

Haematopus palliatus prattii Maynard
Bahaman Oyster-catcher

Two were seen along the rocky shore of Louis Peña on December 28, 1934, and three on the rocky eastern point of Culebrita on January 1, 1935. All were too wary to permit of getting within shooting range of them. Don Eduardo Padró reports that they occur regularly in winter on Cayo Norte. One was seen at Coffy Point, Tortola, on December 31, 1933. There is a specimen, presumably from St. Thomas, in the collection of the St. Thomas High School.

Charadrius vociferus vociferus Linnaeus
Killdeer

A winter visitor, locally common in the Virgin Islands. On Culebra many were seen from December 26 to 30, 1934, at mudholes by small streams, in swampy fields, and also at Flamenco Lagoon

and in mangrove swamps. The stomachs of two birds collected contained exclusively insects, of which Coleoptera, mainly *Bembidion* and Staphylinidae, formed 60 per cent, and Stratiomyid larvae 40 per cent.

One was noted on the shore at Cayo Norte on December 30, 1934. Mr. Beatty has presented me with a female taken in a plowed field on the Bethlehem Estate, St. Croix, on January 5, 1935. Records from other islands are included in my previous paper.

All Killdeers in my collection from islands east of Puerto Rico, and from continental North America, are darker and average larger than specimens from the Dominican Republic and Puerto Rico, and are evidently migrants from North America, as they are very rarely seen in these islands in the summer. They may all be considered as *Charadrius v. vociferus.* Although it would seem that this form must occur in Puerto Rico, at least during migrations, I have seen no specimens from there, all those in my collection being typical *C. v. ternominatus* (distinctly lighter in color, and averaging smaller in size.) An example seen, but not collected, at Mosquito Bay, St. Thomas on June 17, 1935, constitutes my only summer Killdeer record for these islands. It may have belonged to the latter race. The measurements of the Killdeers in my collection (expressed in millimeters) are herewith presented.

CHARADRIUS VOCIFERUS VOCIFERUS

Specimen	Wing	Culmen from base	Tail	Tarsus
No. 1232, male, Culebra, Dec. 26, 1934	153.6	24.3	93.6	36.4
No. 1255, male, Culebra, Dec. 29, 1934	157.7	26.0	89.6	35.2
No. 707, male, St. Thomas, Jan. 4, 1929	159.5	25.1	92.0	34.0
No. 693, male, Salt Island, Dec. 29, 1928	157.1	24.8	96.9	33.5
No. 557, male, St. Martin, Dec. 24, 1927	162.8	24.5	91.8	33.9
No. 1505, female, St. Croix, Jan. 5, 1935	162.7	28.0	96.0	35.0
No. 1307, male, Yakima, Washington, Oct. 19, 1933	167.3	25.9	99.5	35.4
No. 1308, female, Yakima, Washington, Oct, 19. 1933	156.9	26.0	94.8	35.5
No. 20, female, Havre de Grace, Md., Apr. 16, 1926	162.5	25.7	97.6	34.9

CHARADRIUS VOCIFERUS TERNOMINATUS

Specimen	Wing	Culmen from base	Tail	Tarsus
No. 410, male, Haina, R. D., June 16, 1927	147.8	25.0	85.1	35.0
No. 22, male, Arecibo, P. R., Oct. 14, 1926	145.5	25.8	90.0	36.1
No. 21, male, Laguna Cartagena, P. R., Sept. 23, 1924	139.6	23.4	93.0	33.8
No. 885, male, Laguna de Guánica, P. R., Apr. 29, 1933	143.2	25.0	84.7	35.2
No. 1173, male, Laguna de Guánica, P. R., Oct. 6, 1934	145.4	25.8	92.1	36.0
No. 1066, female, Laguna de Gúanica, P. R., Jan. 12, 1934	154.1	26.2	92.7	35.8

Charadrius hiaticula semipalmatus Bonaparte
Semipalmated Plover

A male collected on the seacoast at Enfield Green. St. Croix, on November 1, 1933, was received from Mr. Beatty.

Pagolla wilsonia rufinucha (Ridgway)
Rufous-naped Plover

The male of a pair seen on a small sandy beach at Little Saba on June 18, 1935, was collected. Its stomach contained two small seeds and an earwig.

Tringa flavipes (Gmelin)
Lesser Yellowlegs

One was noted at Brandywine Creek, Tortola, on December 31, 1933.

Tringa melanoleuca (Gmelin)
Greater Yellowlegs

Two were seen at a lagoon on Beef Island December 28, 1933.

Actitis macularia (Linnaeus)
Spotted Sandpiper

Fairly common on Culebra from December 26, 1934, to January 3, 1935. On the latter date a male was collected. Its stomach contained fragments of a small crab. Two were observed at the tiny lagoon on Louis Peña on December 28, 1934, and two on Jost van Dyke on January 1, 1934. The stomach of a male collected

at Brandywine Creek, Tortola, on December 31, 1933, contained a small crab, *Hippa* sp.

Catoptrophorus semipalmatus inornatus (Brewster)
Western Willet

A female collected by Mr. Beatty at Hammer Pond, St. Croix, on October 24, 1933, constitutes the first record for the West Indies. It is now No. 1161 in my collection. It shows the following measurements: Wing 213.0; culmen from base 70.5; tarsus 64.8; tail 85.0 millimeters.

Aremaria interpres morinella (Linnaeus)
Ruddy Turnstone

Fifteen were observed at Flamenco Lagoon, Culebra, on December 27, 1934. Mr. Beatty sent a male obtained on the seacoast at Enfield Green, St. Croix, on November 1, 1933.

Limnodromus griseus griseus (Gmelin)
Dowitcher

Two specimens in winter plumage from St. Croix, sex unknown, were received from Mr. Beatty. One was obtained at the Salt Pond on November 26, 1933, and one at Krausse Lagoon on April 1, 1934.

Capella delicata (Ord)
Wilson's Snipe

Two were seen near Roadtown, Tortola, on December 29, 1933. A male collected at William Pond, St. Croix, on November 5, 1933, was received from Mr. Beatty.

Crocethia alba (Pallas)
Sanderling

A male obtained on Krausse Lagoon, St. Croix, January 1, 1934, was received from Mr. Beatty.

Ereunetes pusillus (Linnaeus)
Semipalmated Sandpiper

Mr. Beatty sent a female collected on the seacoast at Enfield Green, St. Croix, on November 1, 1933.

Ereunetes mauri Cabanis
Western Sandpiper

A female of a pair seen was collected at the slightly brackish lagoon at Beef Island on December 28, 1933. Its stomach contained nothing but sand. This constitutes the first record for the Virgin Islands.

Erolia melanotos (Vieillot)
Pectoral Sandpiper

A male collected at Camp Watch Ho Pond, St. Croix, on October 29, 1933, was received from Mr. Beatty.

Micropalama himantopus (Bonaparte)
Stilt Sandpiper

Mr. Beatty sent a female collected at the Salt Pond, St. Croix, on January 1, 1934, constituting the second record for the Virgin Islands.

Himantopus himantopus mexicanus (P. L. S. Müller)
Black-necked-Stilt

Four were seen at a salt lagoon on the south coast of St. Thomas on August 14, 1931, and two at the small lagoon on Little Saba June 18, 1935.

Larus atricilla Linnaeus
Laughing Gull

Many were observed at St. Thomas in June and August, 1931, July, 1933, and June, 1935, when a male was collected; also at Frederiksted, St. Croix, August 12, 1931, and July 23, 1933. At Little Saba on June 18, 1935, the species was abundant, but apparently not nesting.

Sterna dougallii dougallii Montagu
Roseate Tern

Six were observed in the harbor at St. Thomas on June 15, 1935, and many along the south coast on June 18. On the latter date about fifty were resting on the rocks at Little Saba, but gave no indications of nesting at the time.

Sterna albifrons antillarum (Lesson)
Least Tern

Two were observed along the south coast of St. Thomas on June 17, 1935.

Sterna anaethetus melanoptera Swainson
Bridled Tern

Several were seen near the south coast of St. Thomas on June 18, 1935. The same day many were observed apparently nesting or preparing to nest on Little Saba and Flat Key, although no eggs or young were found. A male was collected on Little Saba. Its stomach contained fragments of a small crab.

Sterna fuscata fuscata Linnaeus
Sooty Tern

One was seen a half mile off the south coast of St. Thomas on July 23, 1933, and many nearer the coast on June 18, 1935. On the latter date the species was found to be abundant and apparently nesting on Little Saba, although no nests were found. A male, with empty stomach, was collected.

Thalasseus maximus maximus (Boddaert)
Royal Tern

Five were observed at Jost van Dyke on January 1, 1934.

Anoüs stolidus stolidus (Linnaeus)
Noddy Tern

One was noted half a mile off the south coast of St. Thomas on July 23, 1933, and many at and close to the coast on June 18, 1935. The same day the species was abundant around the rocky cliffs on Little Saba, and apparently nesting, although it was impossible to reach any of the nests. The stomach of a male collected there contained fragments of Crustaceans.

Columba leucocephala Linnaeus
White-crowned Pigeon

One was seen in the mangroves on Culebra on January 3, 1935.

Columba squamosa Bonnaterre
Scaled Pigeon

One was observed on Culebra January 3, 1935; ten in the denser woods on Louis Peña on December 28, 1934, and six on a wooded hilltop on Cayo Norte on December 30, 1934.

Zenaida aurita zenaida (Bonaparte)
Zenaida Dove

On January 3, 1935, twenty were noted in the fringe of mangroves along the south shore of Bahía Honda in Culebra. One was seen on Culebrita on January 1, 1935.

On St. Thomas three were seen on August 14, 1933, and three more on July 23, 1933. From June 15 to 18, 1935, they were seen commonly, and a male was collected on Signal Hill June 15. Its stomach contained a few partly digested seeds and some sand. On June 18 a visit was made to the enormous breeding colony on Little Saba. That entire islet serves as a breeding place for thousands of these doves, their nests being found everywhere from the shore to the highest peak, both on the ground and in the few available trees and bushes. The great majority of the nests were perforce upon the ground. These consisted merely of a few grasses laid upon the ground, and were placed in tunnel-like excavations under the matted grass which covered by far the greater part of the island. Incubating birds were flushed from these every few steps as one walked over the island. The nests in trees were the crude platforms of sticks typical of this family. On the date of our visit eggs in all stages from freshly laid to those on the point of hatching were found, and many young. Some of the latter were nearly full fledged. Four sets of eggs were collected and two fledglings were preserved as alcoholics. The measurements of the eggs are as follows: One set of 2 slightly incubated eggs measured 28.8 × 21.8 and 30.1 × 22.6 millimeters; a second set of 2 slightly incubated eggs measured 28.2 × 20.8 and 27.8 × 21.6 millimeters; a set of 2 very heavily incubated eggs measured 29.5 × 22.8 and 26.4 × 21.8 millimeters; and a single fresh egg measured 26.8 × 20.9 millimeters. The average measurements of the 7 eggs were 28.23 × 21.76 millimeters.

Hundreds of Zenaida Doves were observed flying across between their breeding colony on Little Saba and their feeding grounds on St. Thomas. In passing by Flat Key it was noted that these doves were apparently nesting there also. Little Saba is a bird reservation; nevertheless depredations are made upon the doves from time to time by residents of St. Thomas who desire a meal of juicy squabs.

Columbigallina passerina portoricensis (Lowe)
Puerto Rican Ground Dove

Common on Culebra, where two were collected on December 29, 1934, and one on January 3, 1935. Abundant on Cayo Norte De-

cember 30, 1934, when two males were collected; their stomachs contained a multitude of small triangular light brown seeds, and a few sunflowerlike seeds. Curiously enough, no Ground Doves were noted on Louis Peña or Culebrita. A male was collected on St. Thomas December 25, 1933. On June 15, 1935, a nest and eggs were collected on Signal Hill, St. Thomas. The nest was the usual very fragile platform of sticks, and was placed ten feet from the ground in an acacia tree. One of the two heavily incubated white eggs was accidentally broken in removing the nest; the other measured 21.9 × 16.2 millimeters. Half a dozen were seen on Little Saba on June 18, 1935.

One was collected at Brandywine Creek, Tortola, on December 31. 1933; its crop was jammed with an enormous number of small leguminous seeds. This species was common on Jost van Dyke January 1, 1934. The crop of a female collected there was filled with small seeds, mainly of grasses. Ground Doves were abundant on Beef Island December 28, 1933, where a female was collected. Its crop was full of seeds, including those of sticktights and grasses, and some large, flat leguminous seeds.

Eupsittula pertinax pertinax (Linnaeus)
Curaçao Paroquet

After many vain attempts to secure paroquets on St. Thomas, my efforts were finally crowned with success on August 14, 1933, when a pair was collected while feeding on the fruits of a guenep tree in the southeastern part of the island. They were very tame while feeding, and after one bird of the pair was collected, the other came to investigate, and was also secured. A few other paroquets were heard in the same general vicinity at the time, but they are said to have become very scarce since the hurricane of 1928. The measurements of the birds collected are: Male, No. 863, length (fresh) 283; extent 432; wing 134.9; culmen from base 25.4; tarsus 14.8; tail 116.1 millimeters. Female, No. 864, length (fresh) 263; extent 437; wing 138.8; culmen from base 25.2; tarsus 14.0; tail 117.0 millimeters.

Coccyzus minor teres Peters
Mangrove Cuckoo

A female was collected in xerophytic scrub on Cayo Norte, where the species was reported to be scarce, on December 30, 1934. Its stomach contents consisted entirely of Orthoptera and their eggs,

including two large walking sticks (35 per cent); 1 grasshopper, *Schistocerca colombina* (20 per cent); 2 katydids, *Microcentrum* sp. (35 per cent); and 30 katydid eggs (10 per cent). One was observed at Signal Hill, St. Thomas, on June 15, 1935, and one in the western end of the island two days later. Two were noted at White Bay, Jost van Dyke, on January 1, 1934.

Crotophaga ani Linnaeus
Ani

Abundant on Culebra December 26, 1934, to January 3, 1935. The stomach of a male collected December 26 contained a weevil (*Diaprepes abbreviatus*). Three large flocks were noted on Louis Peña December 28, 1933. The stomach of a female collected there contained 3 mole crickets, *Scapteriscus vicinus*, 90 per cent; and 2 small drupes, 10 per cent. Three flocks were seen on Culebrita January 1, 1935, and two flocks on Cayo Norte, December 30. 1934. On Jost van Dyke thirty Anis were seen on January 1, 1934, and one flock was noted on Beef Island December 28, 1933.

Nephoecetes niger niger (Gmelin)
Antillean Black Swift

One was noted flying around in company with about twenty Martins at Frederiksted, St. Croix, on July 23, 1933, constituting the first record of the species for the Virgin Islands.

Orthorhynchus exilis exilis (Gmelin)
Gilt-crested Hummingbird

On Culebra single birds were noted on December 27, 1934, and January 3, 1935. One was shot on Culebrita January 1, 1935. On Cayo Norte twenty were seen and three collected on December 30, 1934. The abundance of these hummers there was notable in comparison with their scarcity on other nearby islands. Six were seen and a male collected on Jost van Dyke January 1, 1934.

Sericotes holosericeus holosericeus (Linnaeus)
Blue-breasted Hummingbird

One was seen December 26, 1934, and five January 3, 1935, on Culebra. On the latter date two females were collected. Their stomachs contained fragments of small insects and spiders. On Culebrita fifteen were seen and two collected on January 1, 1935,

the stomachs containing comminuted small insects. Ten were noted on Cayo Norte December 30, 1934, and a female was collected. Three were seen and two collected on Little Saba June 18, 1935. One was recorded on Beef Island December 28, 1933.

Anthracothorax aurulentus (Audebert and Vieillot)
Puerto Rican Mango

This hummingbird, which is rather scarce in the Virgin Islands, was recorded only on Culebrita, where a male was collected on January 1, 1935.

Megaceryle alcyon alcyon (Linnaeus)
Belted Kingfisher

A regular migrant to the Virgin Islands. Seen regularly from December 26, 1934, to January 3, 1935 on Culebra, and on the latter date a female was collected. One was seen on Louis Peña December 28, 1934; two on Culebrita January 1, 1934; one on Cayo Norte December 30, 1934, and two on Jost van Dyke January 1, 1934.

Tyrannus dominicensis dominicensis Gmelin
Gray Kingbird

Common in most of the Virgin Islands. The stomach of a male collected on Culebra December 27, 1934, contained a Tarantula Hawk (*Pepsis rubra*), 85 per cent; and two small drupes, 15 per cent. On Culebra this species occurred commonly on the north side of the island, and was scarce near the town. Two were noted on Louis Peña December 28, 1934. None were observed on Culebrita, but they were common on Cayo Norte December 30, 1934, where a female was collected. It had eaten 80 per cent of animal matter (1 Histerid beetle, *Omalodes klugii*; 1 Cerambycid beetle, *Elaphidion cinereum*, 1 damselfly, and some other insects), and 20 per cent of vegetable matter (1 drupe). Kingbirds were common on Jost van Dyke January 1, 1934, and on Beef Island December 28, 1933, where a male was collected. Its stomach contained exclusively insects, mainly Hymenoptera. The species was recorded at Great Thatch Island January 4, 1934.

Elaenia martinica riisii Sclater
Riise's Elaenia

Common in most of the Virgin Islands. On Culebra it was fairly common from December 26, 1934, to January 3, 1935, and a male

was collected on December 27 and a pair on January 3. These three stomachs contained 96.3 per cent of vegetable matter (drupes), and 3.7 per cent of animal matter (fleabeetles, *Phyllotreta guatemalensis*). On Louis Peña one was noted on December 28, 1934, and twelve on Culebrita January 1, 1935, where a male was collected. Its stomach contained two small lepidopterous larvae. On Cayo Norte it was remarkably abundant, its abundance being in fact one of the most striking features of the avifauna. It was known there by the name of "Jüi". Three males were collected there on December 30, 1934. Their stomachs contained small drupes and berries exclusively. The stomach of a female collected on St. Thomas December 25, 1933, was empty. Those of two collected there in June, 1935, contained exclusively drupes and berries. At this time Elaenias were found to be very abundant in the vicinity of Mosquito Bay. Many were heard singing on Great Thatch Island while passing close to its shores in a sailing vessel on January 4, 1934. On Jost van Dyke three were heard calling on January 1, 1934. The stomach of a male collected December 31, 1933, at Brandywine Bay, Tortola, contained one fruit seed. Two were noted on Beef Island December 28, 1933.

Progne dominicensis (Gmelin)
Caribbean Martin

At Frederiksted, St. Croix, twenty were seen on July 23, 1933.

Mimus polyglottos orpheus (Linnaeus)
Jamaican Mockingbird

On Culebra the Mockingbird is rather generally distributed, but it can scarcely be said to be very common. Males were collected December 27 and 28, 1934, and January 2, 1935, and a female January 3, 1935. The four stomachs contained 94.5 per cent of vegetable matter (drupes 30.7 per cent, berries 25 per cent, large flat seeds 22.5 per cent, and grass 16.3 per cent); and animal matter 5.5 per cent (Lepidopterous larvae).

On Cayo Norte Mockingbirds were locally common in the xerophytic scrub. A male was collected on December 30, 1934, and its stomach was found to contain exclusively berries. A juvenile bird collected at Mosquito Bay, St. Thomas, on June 17, 1935, was found to have eaten nothing but small wild fruits.

Margarops fuscatus fuscatus (Vieillot)
Pearly-eyed Thrasher

This species is of local distribution in the Virgin Islands, very common in some places, and rare or absent in others, without any apparent reason. At the time of my visit to Culebra it was rare there, only one being noted (on January 3, 1935). On Louis Peña on December 28, 1934, it was found to be one of the most abundant birds in the denser woods. A nest was discovered in a hole formed in the crotch of a tree where the trunk divided into two parts, leaving a hole opening towards the top; the hollow inside was nearly two feet deep, and curved slightly away from the opening so that the end of the hollow was not directly beneath it. There a crude nest had been formed of sticks and stems of plants. As the nest-hole was approached, two fledglings fluttered out. One made good its escape, the other was captured and preserved as a specimen. A parent thrasher remained close by while the nest was being examined. It was much excited and very solicitous for the welfare of its young, uttering frequent cat-like calls. The young had the iris dark brown; bill light straw color more or less tinged with dusky, especially on the upper mandible; legs and feet bluish gray; soles light straw color; claws bluish gray of a somewhat darker shade than the legs. Its stomach contained 4 large-seeded drupes. An adult male was also collected on Louis Peña the same day. Its stomach contained fragments of a weevil, 25 per cent; and fragments of a fruit of the "cundeamor", *Momordica charantia*, 75 per cent.

On Culebrita this thrasher was found to be fairly common on January 1, 1935, but none were seen on Cayo Norte, and Don Eduardo Padró, who has lived on Cayo Norte most of his life, and knows the bird well on other nearby islands, states positively that it does not occur there. It was fairly common on Jost van Dyke January 1, 1934, and a female was collected. Its stomach contained 9 large flat seeds of *Cassia*.

On St. Thomas this species was found to be exceptionally abundant near the west end in June, 1935. The stomach of one collected there on June 17 contained small wild fruits and seeds; that of another 6 Surinam Cherries.

Vireo calidris calidris (Linnaeus)
Jamaican Vireo

Observed on St. Thomas June 16 and August 14, 1931; July 21 and 22, 1933; and June 14 and 15, 1935. On the latter date a

pair was collected on Signal Hill. One stomach contained 2 caterpillars and a green cockroach; the other 3 small wild fruits.

Coereba portoricensis sancti-thomae (Sundevall)
Virgin Island Honey Creeper

Common practically throughout the Virgin Islands (except St. Croix). On Culebra it was common from December 26, 1934, to January 3, 1935. Three were collected on December 27. One stomach contained 5 Persicaria-like seeds and 2 small pieces of white seashell; another had two black lepidopterous larvae. On Louis Peña eight were noted and one collected on December 28, 1934; its stomach contained fragments of a small beetle. Twelve were seen and two collected on Culebrita January 1, 1935. One stomach contained 8 small, black Persicaria-like seeds, and the other 2 small lepidopterous larvae. On Cayo Norte December 30, 1934, the species was common, and two were collected. The stomach of one was empty; the other contained a small seed and some insect fragments.

Two Honey Creepers were collected on December 24 and 25, 1933, on St. Thomas. One had eaten 2 small caterpillars, the other stomach had some insect fragments and a little sand. The species was common on Jost van Dyke January 1, 1934. The stomach of a specimen collected there contained 18 Persicaria-like seeds. A Honey Creeper collected at Brandywine Creek, Tortola on December 31, 1933, had eaten a pink caterpillar. On Beef Island December 28, 1933, a newly constructed nest was found, made of grasses with the addition of some wild cotton.

Honey Creepers apparently feed extensively on the nectar of flowers, which does not show up in the stomach examinations. The presence of Persicaria-like seeds in rather large proportions in a number of the stomachs is rather surprising. Possibly the seeds are swallowed accidentally while searching for other food.

Compsothlypis americana pusilla (Wilson)
Northern Parula Warbler

One was observed on Jost van Dyke on January 1, 1934.

Dendroica petechia cruciana Sundevall
Puerto Rican Golden Warbler

Common and generally distributed in the Virgin Islands. On Culebra it was common from December 26, 1934 to January 3, 1935. The stomachs of four specimens collected there contained comminuted

insects, of which Coleoptera formed a large portion. Three were seen on Louis Peña December 28, 1934, and a male collected; its stomach was filled with comminuted insects. On Culebrita three were noted on January 1, 1935. The stomach of a female collected there contained insects too much macerated to permit of identification. Three were also seen on Cayo Norte December 30, 1934. The stomach contents of a male collected there resembled those of birds of the same species collected on other islands. On June 18, 1935, these warblers were found to be common near the diminutive lagoons on Little Saba, and a female was collected. On Jost van Dyke two were heard singing at Great Harbour on January 1, 1934, and the song of this species was also heard on Beef Island December 28, 1933.

Dendroica castanea (Wilson)
Bay-breasted Warbler

Mr. Beatty has forwarded an adult male collected at Fairplain Pastureland, St. Croix on May 5, 1935. This constitutes the first West Indian record of the species. It is now No. 1505 in my collection.

Dendroica discolor discolor (Vieillot)
Prairie Warbler

Two were observed and a male collected on the north side of Culebra December 27, 1934. Its stomach contained comminuted insects, mainly small Coleoptera.

Seiurus motacilla (Vieillot)
Louisiana Water-thrush

A specimen is at hand obtained by Mr. Beatty at Crique Stream, St. Croix, on November 18, 1933.

Seirus noveboracensis noveboracensis (Gmelin)
Water-thrush

Fairly common from December 26, 1934, to January 3, 1935, on Culebra, where one was collected on December 29. Five were seen on Jost van Dyke January 1, 1934. The stomach of a female collected on Tortola December 30, 1933 contained finely comminuted insects and a little sand. Four were noted and a female collected on Beef Island December 28, 1933. Its stomach contained insects and a few *Persicaria* seeds, a little sand, and a small piece of coral. Mr. Beatty

sent me a male taken at Williams Pond, St. Croix, on April 1, 1934, and a male (?) secured at Prosperity Garden Water Hole, St. Croix, April 2, 1934.

Tiaris bicolor omissa Jardine
Carib Grassquit

Common and generally distributed in the Virgin Islands. On Culebra it was common, and three males and two females were collected between December 26, 1934, and January 3, 1935. A nest with three eggs, placed in a tree five feet above the ground, was also collected on the latter date. On Louis Peña twenty were noted on December 28, 1934, and a male bird, together with a nest with three eggs, were collected there. The nest was found in a spiny acacia tree four and a half feet from the ground.

On Culebrita the species was common January 1, 1935, and a male was collected. On Cayo Norte these grassquits were common January 1, 1935, and a pair was collected. They were also common and a female was collected on Jost van Dyke January 1, 1934. A male was collected at Brandywine Creek, Tortola, December 31, 1933. Ten were noted on Beef Island December 28, 1933. The stomach of all specimens collected contained small seeds.

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LIST OF BIRDS KNOWN TO OCCUR IN THE VIRGIN ISLANDS (INCLUDING VIEQUES, CULEBRA AND ADJACENT ISLETS)

1. *Podilymbus podiceps antillarum* Bangs. Antillean Grebe. Vieques (?), Culebra (?), Virgin Gorda, St. Croix.

2. *Puffinus lherminieri lherminieri* Lesson. Audubon's Shearwater. St. Thomas, Little Saba.

3. *Phaëthon lepturus catesbyi* Brandt. Yellow-billed Tropic Bird. Louis Peña, Congo Cay (between St. Thomas and St. Jan).

4. *Pelecanus occidentalis occidentalis* Linnaeus. Brown Pelican. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Great Thatch Island, Jost van Dyke, Tortola, Beef Island, Salt Island, Virgin Gorda, St. Croix.

5. *Sula leucogaster leucogaster* (Boddaert). Brown Booby. Vieques, Culebra, Louis Peña, Culebrita (?), St. Thomas, Little Saba, St. Jan, Great Thatch Island, Jost van Dyke, Tortola, St. Croix.

6. *Fregata magnificens rothschildi* Mathews. Man-o-war Bird. Vieques, Culebra, Louis Peña, Culebrita, St. Thomas, St. Jan, Jost van Dyke, Tortola, Beef Island, St. Croix.

7. *Ardea herodias herodias* Linnaeus. Great Blue Heron. Culebra, Culebrita, St. Thomas, Tortola, St. Croix.

8. *Casmerodius albus egretta* (Gmelin). American Egret. Vieques, St. Thomas, St. Croix.

9. *Leucophoyx thula thula* (Molina). Snowy Egret. Vieques, St. Thomas, St. Croix.

10. *Hydranassa tricolor ruficollis* (Gosse). Louisiana Heron. St. Thomas.

11. *Florida caerulea caerulescens* (Latham). Southern Little Blue Heron. Vieques, Culebra, Louis Peña, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, St. Croix.

12. *Butorides virescens maculatus* (Boddaert). West Indian Green Heron. Vieques, Culebra, Culebrita, Cayo Norte, St. Thomas, St. Jan. Jost van Dyke, Tortola, Virgin Gorda, Anegada, St. Croix.

13. *Nycticorax nycticorax hoactli* (Gmelin). Black-crowned Night Heron. St. Croix.

14. *Nyctanassa violacea violacea* (Linnaeus). Yellow-crowned Night Heron. Vieques, Culebra, St. Thomas, Tortola, Virgin Gorda, St. Croix.

15. *Phoenicopterus ruber* Linnaeus. Flamingo. Formerly Vieques, Culebra, St. Thomas, and St. Croix(?), St. Jan(?), Anegada(?).

16. *Dendrocygna arborea* (Linnaeus). West Indian Tree Duck. Virgin Gorda, St. Croix.

17. *Dendrocygna autumnalis discolor* Sclater and Salvin. Black-bellied Tree Duck. St. Croix.

18. *Anas platyrhynchos platyrhynchos* Linnaeus. Mallard. St. Croix.

19. *Anas discors* Linnaeus. Blue-winged Teal. St. Croix.

20. *Mareca americana* (Gmelin). Baldpate. St. Thomas, St. Croix.

21. *Dafila acuta tzitzihoa* (Vieillot). Pintail. St. Croix.

22. *Dafila bahamensis bahamensis* (Linnaeus). Bahama Duck. Culebra, Culebrita, St. Thomas, Jost van Dyke, Beef Island, Virgin Gorda, St. Croix.

23. *Spatula clypeata* (Linnaeus). Shoveller. St. Thomas.

24. *Nyroca affinis* (Eyton). Lesser Scaup Duck. Vieques, Culebra, Virgin Gorda, St. Croix.

25. *Erismatura jamaicensis jamaicensis* (Gmelin). West Indian Ruddy Duck. St. Croix.

26. *Buteo jamaicensis jamaicensis* (Gmelin). West Indian Red-tailed Hawk. Vieques, Culebra, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, St. Croix.

27. *Pandion haliaëtus carolinensis* (Gmelin). Osprey. Vieques, Culebra, Tortola, Salt Island, St. Croix.

28. *Falco peregrinus anatum* Bonaparte. Duck Hawk. Salt Island, Virgin Gorda, St. Croix.

29. *Falco columbarius columbarius* Linnaeus. Pigeon Hawk. St. Thomas, Virgin Gorda.

30. *Falco sparverius loquaculus* (Riley). Puerto Rican Sparrow Hawk. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, Virgin Gorda, St. Croix.

31. *Colinus virginianus virginianus* (Linnaeus). Quail. St. Croix (introduced).

32. *Colinus cristatus sonnini* (Temminck). Crested Quail. St. Thomas (introduced; now extinct).

33. *Rallus longirostris* subsp. Clapper Rail. Vieques, Culebra, St. Thomas, Tortola, St. Croix.

34. *Porzana carolina* (Linnaeus). Sora Rail. Tortola, St. Croix.

35. *Nesotrochis debooyi* Wetmore. De Booy's Rail. St. Thomas and St. Croix (fossil).

36. *Gallinula chloropus portoricensis* Danforth. Antillean Gallinule. Vieques, Culebra, Cayo Norte, St. Thomas, Jost van Dyke, Tortola, Beef Island, Virgin Gorda, St. Croix.

37. *Fulica americana americana* Gmelin. American Coot. St. Croix.

38. *Fulica caribaea* Ridgway. Caribbean Coot. Culebra, St. Jan, Jost van Dyke, Beef Island, St. Croix.

39. *Haematopus palliatus prattii* Maynard. Bahaman Oystercatcher. Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, Tortola.

40. *Charadrius vociferus vociferus* Linnaeus. Killdeer. Culebra, Cayo Norte, St. Thomas, Salt Island, Virgin Gorda, Anegada, St. Croix.

41. *Charadrius vociferus ternominatus* Bangs and Kennard. Antillean Killdeer. Vieques, St. Thomas (?).

42. *Charadrius hiaticula semipalmatus* Bonaparte. Semipalmated Plover. Vieques, Anegada, St. Croix.

43. *Charadrius alexandrinus tenuirostris* (Lawrence). Cuban Snowy Plover. St. Croix.

44. *Pagolla wilsonia rufinucha* (Ridgway). Rufous-naped Plover. Vieques, Culebra, St. Thomas, Little Saba, Virgin Gorda, Anegada, St. Croix.

45. *Pluvialis dominica dominica* (Müller). Golden Plover. St. Croix.

46. *Squatarola squatarola cynosurae* Thayer and Bangs. Blackbellied Plover. St. Croix.

47. *Arenaria interpres morinella* (Linnaeus). Ruddy Turnstone. Culebra, Culebrita, Tortola, St. Croix.

48. *Capella delicata* (Ord). Wilson's Snipe. Tortola, St, Croix.

49. *Numenius phaeopus hudsonicus* Latham. Hudsonian Curlew. Anegada, St. Croix.

50. *Actitis macularia* (Linnaeus). Spotted Sandpiper. Vieques, Culebra, Louis Peña, St. Thomas, St. Jan. Jost van Dyke, Tortola. Virgin Gorda, St. Croix.

51. *Tringa solitaria solitaria* Wilson. Solitary Sandpiper. St. Croix.

52. *Tringa flavipes* (Gmelin). Lesser Yellowlegs. Vieques, St. Thomas, Tortola, Anegada, St. Croix.

53. *Tringa melanoleuca* (Gmelin). Greater Yellowlegs. Beef Island, St. Croix.

54. *Catoptrophorus semipalmatus semipalmatus* (Gmelin). Willet. Anegada, St. Croix.

55. *Catoptrophorus semipalmatus inornatus* (Brewster). Western Willet. St. Croix.

56. *Limnodromus griseus griseus* (Gmelin). Dowitcher. St. Croix.

57. *Limnodromus griseus scolapaceus* (Say). Long-billed Dowitcher. Anegada.

58. *Calidris canutus rufus* (Wilson). Knot. St. Croix.

59. *Crocethia alba* (Pallas). Sanderling. St. Croix.

60. *Ereunetes pusillus* (Linnaeus). Semipalmated Sandpiper. St. Thomas, Anegada, St. Croix.

61. *Ereunetes mauri* Cabanis. Western Sandpiper. Beef Island.

62. *Erolia minutilla* (Vieillot). Least Sandpiper. St. Croix.

63. *Erolia melanotos* (Vieillot). Pectoral Sandpiper. St. Croix.

64. *Erolia fuscicollis* (Vieillot). White-rumped Sandpiper. Culebrita.

65. *Micropalama himantopus* (Bonaparte). Stilt Sandpiper. Anegada, St. Croix.

66. *Limosa fedoa* (Linnaeus). Marbled Godwit. St. Croix.

67. *Himantopus himantopus mexicanus* (Müller). Black-necked Stilt. Vieques, St. Thomas, Little Saba, Tortola, St. Croix.

68. *Larus atricilla* Linnaeus. Laughing Gull. Vieques, Culebra, Culebrita, St. Thomas, Little Saba, St. Croix.

69. *Sterna daugallii dougallii* Montagu. Roseate Tern. St. Thomas, Little Saba, St. Croix.

70. *Sterna albifrons antillarum* (Lesson). Least Tern. St. Thomas, St. Croix.

71. *Sterna anaethetus melanoptera* Swainson. Bridled Tern. St. Thomas, Little Saba.

72. *Sterna fuscata fuscata* Linnaeus. Sooty Tern. St. Thomas, Little Saba, Tortola (?), St. Croix.

73. *Thalasseus maximus maximus* (Boddaert). Royal Tern. Vieques, Culebra, Culebrita, St. Thomas, St. Jan, Jost van Dyke, Tortola, Anegada, St. Croix.

74. *Anoüs stolidus stolidus* (Linnaeus). Noddy Tern. St. Thomas, Little Saba, St. Croix (?).

[*Rhynchops nigra nigra* Linnaeus. Black Skimmer. St. Croix (?).]

75. *Columba leucocephala* Linnaeus. White-crowned Pigeon. Vieques, Culebra, Virgin Gorda, St. Croix.

76. *Columba squamosa* Bonnaterre. Scaled Pigeon. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Tortola, St. Croix.

[*Crossopthalmus gymnopthalmus* (Temminck). Bare-eyed Pigeon. St. Thomas (?).]

77. *Zenaida aurita zenaida* (Bonaparte). Zenaida Dove. Vieques, Culebra, Louis Peña, Culebrita, St. Thomas, Little Saba, St. Jan, Tortola, Salt Island, Virgin Gorda, St. Croix.

78. *Zenaida aurita aurita* (Temminck). Martinique Dove. Virgin Gorda, St. Croix.

79. *Columbigallina passerina portoricensis* (Lowe). Puerto Rican Ground Dove. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, Little Saba, St. Jan, Jost van Dyke, Tortola, Beef Island, Salt Island, Virgin Gorda, Anegada.

79 *a*. *Columbigallina passerina nigrirostris* Danforth. St. Kitts Ground Dove. St. Croix.

80. *Oreopeleia montana* (Linnaeus). Ruddy Quail Dove. Vieques, St. Thomas, St. Croix (formerly).

81. *Oreopeleia mystacea mystacea* (Temminck). Bridled Quail Dove. Culebra (formerly), St. Croix.

82. *Amazona vittata gracilipes* Ridgway. Culebra Parrot. Culebra (extinct).

83. *Eupsittula pertinax pertinax* (Linnaeus). Curaçao Paroquet. St. Thomas.

84. *Coccyzus americanus americanus* (Linnaeus). Yellow-billed Cuckoo. St. Croix.

85. *Coccyzus minor teres* Peters. Mangrove Cuckoo. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, Virgin Gorda, St. Croix.

86. *Saurothera vieilloti* (Bonaparte). Puerto Rican Lizard Cuckoo. Vieques, St. Thomas (formerly).

87. *Crotophaga ani* Linnaeus. Ani. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, Beef Island, Salt Island, Virgin Gorda, Anegada, St. Croix.

88. *Gymnasio nudipes newtoni* (Lawrence). Newton's Owl. Vieques (?), St. Thomas, St. Jan, St. Croix. Extinct.

89. *Antrostomus carolinensis* (Gmelin). Chuck-will's-widow. Vieques, St. Croix.

90. *Nephoecetes niger niger* (Gmelin). West Indian Black Swift. St. Croix.

91. *Orthorhynchos exilis exilis* (Gmelin). Gilt-crested Hummingbird. Vieques, Culebra, Culebrita, Cayo Norte, St. Thomas, St. Jan.

Jost van Dyke, Tortola, Salt Island, Virgin Gorda, Anegada, St. Croix.

92. *Sericotes holosericeus holosericeus* (Linnaeus). Blue-breasted Hummingbird. Vieques, Culebra, Culebrita, Cayo Norte, St. Thomas, Little Saba, St. Jan, Tortola, Beef Island, Salt Island, Virgin Gorda, Anegada, St. Croix.

93. *Anthracothorax aurulentus* (Audebert and Vieillot). Puerto Rican Mango Hummingbird. Vieques, Culebra, Culebrita, St. Thomas. St. Jan, Anegada.

94. *Megaceryle alcyon alcyon* (Linnaeus). Belted Kingfisher. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, St. Croix.

95. *Melanerpes portoricensis* (Daudin). Puerto Rican Woodpecker. Vieques.

96. *Sphyrapicus varius varius* (Linnaeus). Yellow-bellied Sapsucker. St. Croix.

97. *Tyrannus dominicensis dominicensis* (Gmelin). Gray Kingbird. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Great Thatch Island, Tortola, Beef Island, Salt Island, Virgin Gorda, Anegada, St. Croix.

98. *Tolmarchus taylori* (Sclater). Puerto Rican Petchary. Vieques.

99. *Myiarchus antillarum* (Bryant). Puerto Rican Flycatcher. Vieques.

100. *Elaenia martinica riisii* Sclater. Riise's Elaenia. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Great Thatch Island, Tortola, Beef Island, Virgin Gorda, Anegada, St. Croix.

101. *Hirundo erythrogaster* Boddaert. Barn Swallow. St. Thomas, St. Croix.

102. *Progne dominicensis* (Gmelin). Caribbean Martin. Vieques, St. Croix.

103. *Corvus leucognaphalus* Daudin. Puerto Rican Crow. St. Croix (extinct).

104. *Mimus polyglottos orpheus* (Linnaeus). Jamaican Mockingbird, Vieques, Culebra, Culebrita, Cayo Norte, St. Thomas, St. Jan, Tortola, Salt Island, Virgin Gorda, St. Croix.

105. *Margarops fuscatus fuscatus* (Vieillot). Pearly-eyed Thrasher. Vieques, Culebra, Louis Peña, Culebrita, St. Thomas, St. Jan, Jost van Dyke, Tortola, Virgin Gorda, St. Croix.

106. *Vireo calidris calidris* (Linnaeus). Jamaican Vireo. Vieques, Louis Peña, Culebrita, St. Thomas, St. Croix.

107. *Coereba portoricensis sancti-thomae* (Sundevall). Virgin Islands Honey Creeper. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, Beef Island, Virgin Gorda, Anegada.

108. *Coereba newtoni* (Baird). St. Croix Honey Creeper. St. Croix.

109. *Mniotilta varia* (Linnaeus). Black and White Warbler. Vieques, Culebra, St. Thomas, St. Croix.

110. *Compsothlypis americana pusilla* (Wilson). Northern Parula Warbler. Vieques, Culebra, Louis Peña, St. Thomas, Jost van Dyke, Tortola, Virgin Gorda, St. Croix.

111. *Dendroica tigrina* (Gmelin). Cape May Warbler. Vieques, St. Thomas, St. Croix.

112. *Dendroica petechia cruciana* Sundevall. Puerto Rican Golden Warbler. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, Little Saba, St. Jan, Jost van Dyke, Tortola, Beef Island, Virgin Gorda, Anegada, St. Croix.

113. *Dendroica caerulescens caerulescens* (Gmelin). Black-throated Blue Warbler. Vieques.

114. *Dendroica coronata* (Linnaeus). Myrtle Warbler. Vieques, Culebra.

115. *Dendroica virens virens* (Gmelin). Black-throated Green Warbler. St. Croix.

[*Dendroica dominica dominica* (Linnaeus). Yellow-throated Warbler. St. Thomas (?).]

116. *Dendroica adelaidae* Baird. Adelaide's Warbler. Vieques.

117. *Dendroica castanea* (Wilson). Bay-breasted Warbler. St. Croix.

118. *Dendroica discolor discolor* (Vieillot). Prairie Warbler. Vieques, Culebra, St. Thomas, St. Jan, Tortola, Virgin Gorda.

119. *Dendroica palmarum palmarum* (Gmelin). Palm Warbler. St. Croix.

120. *Seiurus aurocapillus* (Linnaeus). Oven-bird. Vieques, Culebra, St. Thomas, Tortola, St. Croix.

121. *Seiurus noveboracensis noveboracensis* (Gmelin). Water-thrush. Culebra, Louis Peña, St. Thomas, St. Jan, Jost van Dyke, Tortola, Beef Island, Virgin Gorda, St. Croix.

122. *Seiurus noveboracensis notabilis* Ridgway. Grinnell's Water-thrush. Culebra, St. Croix.

123. *Seiurus motacilla* (Vieillot). Louisiana Water-thrush. Vieques, St. Croix.

124. *Wilsonia canadensis* (Linnaeus). Canada Warbler. St. Croix.

125. *Setophaga ruticilla* (Linnaeus). Redstart. Vieques, Culebra, Louis Peña, St. Thomas, St. Jan, Tortola, Virgin Gorda, St. Croix.

126. *Dolichonyx oryzivorus* (Linnaeus). Bobolink. Vieques.

127. *Icterus icterus ridgwayi* (Hartert). Troupial. St. Thomas.

128. *Holoquiscalus niger brachypterus* (Cassin). Puerto Rican Grackle. Vieques, Culebra (?). Introduced in St. Croix.

129. *Molothrus bonariensis minimus* Dalmas. Dwarf Cowbird. Vieques (accidental).

130. *Piranga erythromelas* Vieillot. Scarlet Tanager. Tortola (?), St. Croix.

131. *Tiaris bicolor omissa* Jardine. Carib Grassquit. Vieques, Culebra, Louis Peña, Culebrita, Cayo Norte, St. Thomas, St. Jan, Jost van Dyke, Tortola, Beef Island, Salt Island, Virgin Gorda, Anegada, St. Croix.

132. *Tiaris olivacea bryanti* (Ridgway). Bryant's Grassquit. Vieques, Culebra.

THE BIRDS OF BARBUDA, WITH NOTES ON THEIR ECONOMIC IMPORTANCE, AND RELATIONSHIP TO THE PUERTO RICAN AVIFAUNA

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Barbuda is a low coral island surrounded by dangerous reefs situated twenty-five miles due north of Antigua in the northern part of the Lesser Antilles. It has an area of 62 square miles. The island is very flat, most of it being scarcely twenty feet above the sea, and so level that in order to drive teams (or automobiles, if there were any on the island) all that is necessary is to clear away sufficient brush. In the eastern part of the island there are some low limestone hills known as The Highlands, the highest point of which attains an elevation of 205 feet. In the western part of the island is an enormous shallow salt lagoon known as the Salt Pond, or the Lagoon, with an outlet to the sea at its northern end, and bounded on the west by a narrow strip of land. The island's only village, Codrington (in which all of its 903 inhabitants are obliged by law to live) is situated on the shore of the southeastern part of this lagoon. Small sailing vessels proceed directly to the village, but larger craft have to anchor at a considerable distance off the landing known as The River on the south coast of the island, three and a half miles from Codrington.

The climate of the island is dry, and there is no fresh water on the surface, although this is easily obtained from wells. Xerophytic brush occurs everywhere, this being generally very dense in the northern part of the island and of a more open nature in the southern part. Mangrove swamps occur along the coast.

From 1691 until 1870 Barbuda was leased by the British Crown to the Codrington family, who used it as a stock farm for their estates in Antigua and also as a shooting estate. Afterwards other leases were granted, but in 1898 the Crown resumed possession and the island passed under the government of Antigua. The Codringtons introduced deer and guinea fowl. Remnants of these still survive. Land tortoises are abundant in the southern part of the island. A living immature specimen sent to Dr. Thomas Barbour was identified as *Testudo tabulata* Walbaum. It may have been introduced.

Comparatively few ornithologists have visited Barbuda, probably due in part to the lack of transportation facilities.

The first ornithological collections on Barbuda were made by Count Dalmas who visited the island in 1875 on a yachting cruise on which he also visited the Canary Islands, various islands of the Antilles, the coast of Venezuela, and the west coast of Africa. Apparently no complete account of his collections, which went to the Paris Museum, has been published, but E. Oustalet (Bulletin de la Société Zoologique de France, Vol. 20, 1895, p. 184) described *Loxigilla Chazaliei* from two specimens which Dalmas collected on Barbuda February 25, 1875.

The next collections were made in the late summer of 1877 by F. A. Ober for the Smithsonian Institution. George N. Lawrence reported on this collection (Proceedings of the U. S. National Museum, I, 1878, pp. 232–242). He lists 39 species from Barbuda, but by no means all of these were collected, and some were recorded on very doubtful hearsay evidence only.

In the late summer and fall of 1903 H. G. Selwyn Branch spent considerable time collecting on Barbuda, and obtained 158 birdskins there. These were later obtained by the U. S. National Museum, and reported upon by J. H. Riley (Smithsonian Miscellaneous Collections, Quarterly Issue, II, 1905, pp. 277–291).

In the early part of January, 1930, James Bond, collecting for the Academy of Natural Sciences of Philadelphia, spent a few days on Barbuda, but to date has published no account of his collections, with the exception of a few notes on *Dendroica subita* which were published in the Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 82, 1930, p. 334.

The present writer, accompanied by an assistant, Virgilio Biaggi, Jr., spent three days collecting on Barbuda in August 1933. We sailed from Antigua at 3 A.M. on August 13 on the S.S. "Saint Raphael" which had been specially chartered to take a party of French sportsmen from Martinique on a hunting trip to Barbuda, as guests of these gentlemen. We arrived at "The River", Barbuda, four hours later. Landing on the sandy beach was accomplished in three stages, first by a motorboat until the water became too shallow, then by a rowboat, and the last part of the way by wading. Mr. Carlton Moore, the warden of Barbuda, was awaiting us with a team of horses for transportation to the village. On arrival there we immediately began collecting, and continued at that occupation until the evening of August 15, when we returned to the "Saint

Raphael", which sailed that night for Antigua. During these three days we visited the brushy country north and south of Codrington, the salt lagoon and its bordering mangrove swamps, and made an extended trip on foot to the Highlands, ascending to the highest point of land on the island. Observations were made on 33 species of birds, of which 11 were collected.

An examination of the literature available shows that before the time of the writer's visit 47 species of birds had been positively recorded from the island, and 9 additional species doubtfully listed. Seven species are here definitely recorded for the first time, including two which had previously been listed questionably, bringing the list up to 54 species known to occur in Barbuda. The 7 species which have been listed doubtfully are here treated hypothetically, and in the list which follows are enclosed in brackets.

Thirty-six of the fifty-four birds positively known from Barbuda are even subspecifically identical with birds found in Puerto Rico. Of the remaining eighteen species, eight are only subspecifically distinct from forms found in Puerto Rico, and seven more represent genera found likewise in Puerto Rico, leaving only four genera found in Barbuda which are not also found in Puerto Rico. Therefore a study of the birds of Barbuda, including their economic importance, gives us a good insight into our own avifauna.

It is of special interest to note the relationships of *Dendroica subita* of Barbuda to *D. adelaidae* of Puerto Rico. These two species, together with *D. delicata* of St. Lucia, constitute what German ornithologists term a *formenkreis,* a group of closely related species within a genus. The distribution of this *formenkreis* is most remarkable in being so disconnected on three widely separated islands, with no representation of the group occurring on intervening islands. The appearance of these birds is so similar that they have been regarded by some authorities as only subspecifically distinct, but due to interruptions in the distribution of the group it seems best to regard the forms as distinct species within a *formenkreis.* Their habits are very similar, except that *D. adelaidae* and *D. subita* prefer dry brushy regions, whereas *D. delicata* of St. Lucia, due to the generally humid nature of that island, is obliged to adapt itself to wetter conditions. The songs of the three forms are quite distinct, which is an additional reason for regarding them as distinct species.

The writer is greatly indebted to the French sportmen, and especially to their representative in Antigua, Mr. Alex. A. Camacho, who made the trip to Barbuda possible; and to Mr. Carlton Moore, the

warden of Barbuda, and Mrs. Moore, for hospitality and assistance in many ways while on the island.

An annotated list of the birds known to occur on Barbuda follows. The specimens collected by the writer are in his private collection, which is at present deposited at the College of Agriculture and Mechanic Arts of the University of Puerto Rico.

[*Podilymbus podiceps antillarum* Bangs. Antillean Grebe. "Diver". Recorded doubtfully by Ober.]

1. *Phaëthon lepturus catesbyi* Brandt. Yellow-billed Tropic Bird. Found by Ober breeding in cliffs in the eastern part of the island.

2. *Pelecanus occidentalis occidentalis* Linnaeus. Brown Pelican. Ober states that it breeds.

3. *Fregata magnificens rothschildi* Mathews. Man-o-war Bird. "Scissor-tail". A common resident. Ober states that it lays in June, and that he found young still in the nest at the time of his visit. In August 1933 the species was common. On one occasion as many as eight were seen together.

4. *Ardea herodias herodias* Linnaeus. Great Blue Heron. Ober states that it is migratory, arriving about the first of September.

[*Casmerodius albus egretta* (Gmelin). Egret. Recorded doubtfully by Ober on hearsay evidence.]

5. *Leucophoyx thula thula* (Molina). Snowy Egret. Branch collected a male on September 22, 1903.

6. *Florida caerulea caerulescens* (Latham). Southern Little Blue Heron. Common resident. In 1933 individuals in both blue and white plumages were seen in various localities.

7. *Butorides virescens maculatus* (Boddaert). West Indian Green Heron. Common resident. A number were seen near Codrington on August 13 and 15, 1933.

8. *Nyctanassa violacea violacea* (Linnaeus). Yellow-crowned Night Heron. In 1903 Branch obtained two specimens on Barbuda. On August 13, 1932, we observed an adult along the east shore of the lagoon.

9. *Dendrocygna arborea* (Linnaeus). West Indian Tree Duck. "Whistler". Branch obtained a male on November 16, 1903. The bird which was recorded by Lawrence under the name of *Clangula glaucion* is possibly this species, as he also refers to it as the "Whistler", a name by which the Tree Duck is known locally.

10. *Dafila bahamensis bahamensis* Linnaeus. Bahama Duck. "White-throat Duck". Recorded by Lawrence and Riley.

[*Falco peregrinus anatum* Bonaparte. Duck Hawk. Recorded by Ober on hearsay evidence.]

11. *Falco sparverius caribaearum* Gmelin. Lesser Antillean Sparrow Hawk. "Killi-killi". Recorded as very common by Lawrence, and Branch obtained 6 specimens. In 1933 just three specimens were seen. On August 14 one was found dead by a road northeast of Codrington, and a female, apparently its mate, was collected a few feet beyond. Its stomach contained two *Anolis* lizards about two inches long. Another bird was seen the next day two miles south of Codrington.

12. *Numida galaeata* Pallas. Guinea Hen. Said to have been introduced by the Codringtons many years ago, but reputed to have become rather scarce in recent years and found only in the woods at a considerable distance from the town. The French sportsmen obtained a few in their bags, and others were served as food at the Government House during our stay.

13. *Rallus longirostris manglecola* Danforth (?). Clapper Rail. A *Rallus* recorded by Ober as resident but not common might prove to be this form if specimens could be collected. Special efforts were made in 1933 to obtain this bird, but although some likely mangrove swamps were visited none were seen or heard.

14. *Gallinula chloropus portoricensis* Danforth. Antillean Gallinule. Branch obtained three specimens in 1903.

[*Fulica caribaea* Ridgway. Caribbean Coot. Coots were listed questionably by Lawrence as migrants.]

[*Charadrius hiaticula semipalmatus* Bonaparte. Semipalmated Plover. Listed questionably by Lawrence.]

15. *Pluvialis dominica dominica* (Müller). Golden Plover. In Ober's day these birds arrived "in immense flocks first storm (N. W.) after Sept. 1st". Branch obtained a male September 2, 1903. In recent years Golden Plovers appear to be scarcer throughout the West Indies.

16. *Arenaria interpres morinella* (Linnaeus). Ruddy Turnstone Ten birds observed by the writer near Codrington on August 15, 1933, apparently constitute the first record for the island.

[*Capella delicata* (Ord). Wilson's Snipe. Recorded by Ober on hearsay evidence.]

17. *Numenius phaeopus hudsonicus* Latham. Hudsonian Curlew. Stated by Ober to be common and breeding, although this last statement must be accepted as doubtful. Branch collected females on September 25 and November 12, 1903. On August 13, 1933, the

writer noted a flock of four in a mangrove swamp near the southern end of the lagoon, but they were so shy it proved impossible to collect any.

18. *Actitis macularia* (Linnaeus). Spotted Sandpiper. Strangely enough this ubiquitous species does not seem to have been recorded from Barbuda until now. On August 13, 1933, ten were observed on the east shore of the lagoon, and six on August 15.

19. *Tringa solitaria solitaria* Wilson. Solitary Sandpiper. Recorded doubtfully by Lawrence. The first definite record is of one observed by the writer at a stock-watering hole near Codrington on August 14, 1933.

20. *Tringa flavipes* (Gmelin). Lesser Yellowlegs. Listed by Lawrence as "Common; resident or nearly so". Examples were noted by the writer on August 13, 14 and 15, 1933.

21. *Catoptrophorus semipalmatus semipalmatus* (Gmelin). Recorded by Ober as common.

22. *Erolia melanotos* (Vieillot). Pectoral Sandpiper. Branch collected a male on September 22, 1903.

23. *Erolia fuscicollis* (Vieillot). White-rumped Sandpiper. Branch collected females on September 20 and 22, 1903.

24. *Erolia minutilla* (Vieillot). Least Sandpiper. About 40 observed near Codrington on August 13, 1933, and 20 on the 15th. Not previously recorded.

25. *Ereunetes pusillus* (Linnaeus). Semipalmated Sandpiper. Recorded by Lawrence and Riley.

26. *Himantopus himantopus mexicanus* (Müller). Black-necked Stilt. Reported by Ober, who said it was not common.

27. *Larus atricilla* Linnaeus. Laughing Gull. Stated by Ober to breed, but he gives no evidence for the statement. In August, 1933 the species was observed commonly along the coast.

28. *Sterna hirundo hirundo* Linnaeus. Common Tern. Branch collected a female September 24, 1903.

29. *Thalasseus maximus maximus* (Boddaert). Royal Tern. Recorded doubtfully by Lawrence. One was observed by the writer at "The River" August 13, 1933.

30. *Columba leucocephala* Linnaeus. White-crowned Pigeon. "White-head Pigeon". Common resident, recorded by both Lawrence and Riley. In August 1933 the species was found to be fairly common, especially at the Highlands. The French sportsmen had a few in their bags, and secured about a dozen half-grown young alive, which they took back to Martinique in cages.

31. *Columba squamosa* Bonnaterre. Scaled Pigeon. One was noted in the day's bag of the French sportmen on August 15, 1933. This apparently constitutes the first record for the island.

32. *Zenaida aurita aurita* (Temminck and Knip). Zenaida Dove. "Turtle Dove". Abundant and generally distributed. During their three days of hunting in August 1933 the French sportsmen shot over 6,000 of them. In addition they captured nearly 100 living young not yet able to fly which they took back to Martinique in cages. One was collected by the writer on August 15.

33. *Columbigallina passerina nigrirostris* Danforth. Ground Dove. Abundant resident. A female was collected August 13, 1933.

34. *Oreopeleia mystacea mystacea* (Temminck). Bridled Quail Dove. Cory (Cat. West Ind. Birds, 1892, p. 97) lists the species from Barbuda.

35. *Coccyzus minor rileyi* Ridgway. Antigua Mangrove Cuckoo. Recorded by Ober as not common. Branch collected five specimens. In 1933 the writer collected a female south of Codrington on August 15. No other examples of the species were seen. Its stomach contained three large Otiorhynchid weevils.

36. *Coccyzus americanus americanus* (Linnaeus). Yellow-billed Cuckoo. Listed from Barbuda by Cory (Cat. West Ind. Birds, 1892, p. 102). Probably occurs as a straggler.

37. *Orthorhynchus exilis exilis* (Gmelin). Crested Hummer. Common resident. In 1933 two were seen at Codrington on August 13 and six at Highlands the next day.

38. *Sericotes holosericeus holosericeus* (Linnaeus). Blue-breasted Hummer. Common resident. Three were seen at Codrington August 13, 1933, and eight at Highlands the next day.

[*Eulampis jugularis* (Linnaeus). Red-throated Hummer. Listed from Barbuda by Ridgway (U. S. National Museum Bulletin 50, 1911, p. 478), the authority cited being Lawrence (Proc. U. S. Nat. Museum, 1878, p. 240). On investigation of this reference no citation of the species by name is found, but under *Orthorhynchus exilis* occurs the following statement, quoted from Ober's notes: " . . . Rev. Mr. Curley (one of the proprietors) described a larger species visiting the island later, resembling exactly (he said) the Mango, of which he had a colored plate." As this evidence is so indefinite the species is relegated to the hypothetical list.]

39. *Megaceryle alcyon alcyon* (Linnaeus). Belted Kingfisher. Migrant from North America, probably common in winter. Branch collected specimens on August 17 and November 19, 1903.

40. *Tyrannus dominicensis vorax* (Vieillot). Large-billed Kingbird. "Loggerhead". Common resident.

41. *Myiarchus oberi berlepschii* Cory. St. Kitts Flycatcher. Recorded by Ober as found infrequently in the thick laurel scrub. Branch collected nine in 1903. In 1933 the species was found sparingly distributed in the dense xerophytic scrub, one being seen south of Codrington on August 13; four, of which a male and two females were collected, at Highlands on August 14; and two northeast of Codrington the same day. The measurements of the male collected are: Wing 82.0; tail 80.2; culmen from base 25.1; tarsus 22.3 millimeters. The two females measure: Wing 82.7–87.3; tail 85.1–83.3; culmen from base 26.0–26.1; tarsus 23.4–23.3 millimeters. The three birds collected had eaten 81.6 per cent of animal matter and 18.4 per cent of vegetable material. One stomach contained 6 Otiorhynchid weevils (*Lachnopus* sp.), a small Lepidopterous larva, and 12 seeds of *Solanum bahamensis*. Another had a land snail, 9 Geometrid larvae, a large Otiorhynchid weevil, a large leguminous seed, and 11 seeds of *Solanum bahamensis*. The third contained a large Otiorhynchid weevil, some unidentified insect fragments, and some pieces of seeds.

42. *Margarops fuscatus fuscatus* (Vieillot). Pearly-eyed Thrasher. "Thrush". Branch collected five specimens in 1903. In 1933 the writer observed five at Highlands on August 14.

43. *Allenia apicalis* (Hartlaub). Scaly-breasted Thrasher. "Thrush". In 1903 Branch obtained three specimens. On August 14, 1933, the writer observed three at Highlands.

44. *Cinclocerthia ruficauda pavida* Ridgway. St. Kitts Trembler. "Thrush". Apparently very scarce, the only records being of Ober. In 1933 special search was made for this bird to no avail.

45. *Vireo calidris barbadensis* Ridgway. Barbados Vireo. Common; breeds. Many observed in August 1933.

46. *Coereba dominicana* (Taylor). Dominica Honey Creeper. "Yellow-throat". Common resident. A male was collected August 14, 1933, at Highlands. Its stomach contained fragments of insects.

47. *Dendroica petechia bartholemica* (Sundevall). Golden Warbler. "West Indian Canary". Common resident, found both in the mangroves and throughout the xerophytic brush. On August 14, 1933, several females were noted feeding young on the wing. Three males were collected, one at the edge of the lagoon August 13, another at Highlands August 14. and the third south of Codrington August 15. Two stomachs contained nothing but insect material, among

which two Syrphid flies (*Mesogramma* sp.) and a Lepidopterous larva were recognized in one, and five Lepidopterous larvae, an ant pupa, and fragments of Coleoptera, including Chrysomelidae, in the other.

48. *Dendroica subita* Riley. Barbuda Warbler. "Christmas Bird". This warbler, the only bird peculiar to Barbuda, with the possible exception of the *Loxigilla*), is closely related to *D. adelaidae* of Puerto Rico, and *D. subita* of St. Lucia. According to Bond its song is intermediate between the songs of these two forms. It is very common in Barbuda, particularly in the more open brushy country south of Codrington. In this region, where the vegetation consisted of an almost pure stand of shrubs which Dr. N. L. Britton has identified as *Volkameria aculeata* L., this warbler was absolutely the most abundant bird. It was much less common in the denser mixed scrub of the northern part of the island. Only a few were singing at the time of my visit; the song was a sort of warbling without the characteristic trill of the song of *D. adelaidae;* in fact the song suggested that of *D. aestiva* more than that of *D. adelaidae.* Eight specimens were collected on August 13, 14 and 15, 1933, seven of them south of Codrington and one at Highlands. On August 13 an old nest which appeared to be of this species was found; it was a cup-shaped structure of grasses and other plant fibers placed about five feet above the ground in a *Volkameria* bush. Three stomachs contained 96.6 per cent of animal matter and 3.4 per cent of vegetable material. Lepidopterous larvae were found in all the stomachs and constituted 64.6 per cent of the food. Diptera, a Pyralid moth, and Coleoptera (including a small Bostrichid beetle and two Cryptocephaline fleabeetles) were also recognized. The vegetable material consisted of some fragments of grass in on stomach and two small seeds in another.

49. *Dendroica discolor discolor* (Vieillot). Prairie Warbler. Migrant from North America. Branch collected specimens on November 2 and 23, 1903.

50. *Setophaga ruticilla* (Linnaeus) American Redstart. Winter migrant. Branch collected seven specimens between August 10 and November 23, 1903.

51. *Holoquiscalus fortirostris fortirostris* (Lawrence). Barbados Grackle. "Blackbird". Introduced from Barbados, according to Mr. Carlton Moore, warden of Barbuda, in the period between 1912 and 1914. Now the species is common in the vicinity of the village of Codrington, but was not observed elsewhere. As many as 150 were

seen in one flock shortly before dusk on August 14, 1933. On that date a male was collected. It is definitely *fortirostris,* and all the other birds seen appeared to be of that form also, as very little difference in color could be noted between different individuals in the flocks, and all appeared to be of small size. The wing of the male collected measures 104.7 millimeters. In this connection it might be mentioned that all specimens noted in Antigua in July and August of the same year also appeared to be typical *fortirostris* and a pair collected were definitely so. The wing of the male measures 103.8 and of the female 91.2 millimeters. The stomach of the bird collected on Barbuda contained 30 large black seeds and fragments of a beetle.

52. *Tanagra flavifrons flavifrons* (Sparrmann). Lesser Antillean Euphonia. Apparently very rare. The only record is of a male collected by Branch in 1903.

53. *Loxigilla noctis chazaliei* Oustalet. Barbuda Bullfinch. "Sparrow". Common resident. The first record is of two collected on February 25, 1875 by Dalmas, which were used by Oustalet in describing *Loxigilla Chazaliei* as a new form, which has been generally forgotten by ornithologists. However, I am constrained to revive this name at least temporarily until a fuller investigation can be made into the relationships of the various forms of *L. noctis,* due to the evident difference between the bullfinches of Barbuda and Antigua. Those of Barbuda are much grayer in color, a difference that is even more noticeable in the field than with the bird in the hand. Males were collected on the east shore of the lagoon August 13 and at Highlands August 14, 1933. A stomach contained nothing but fragments of seeds.

54. *Tiaris bicolor omissa* Jardine. Carib Grassquit. "Grassbird". Abundant resident. Males were collected at Highlands August 14 and south of Codrington August 15, 1933. Their stomachs were filled with small seeds.

A NEW GROUND DOVE FROM THE WEST INDIES

By Stuart T. Danforth

In a series of 40 Ground Doves in my collection obtained in Puerto Rico, the Virgin Islands and the northern Lesser Antilles, I find that there is a constant difference in the color of the bills of freshly killed specimens. Specimens from Puerto Rico, Culebra and Cayo Norte have the basal two-thirds of the bill bright rose red and the tip black or dusky. Those from St. Croix and the Lesser Antilles have the bill of a uniform dusky color with no trace of red at the base, sometimes with a trace of dull orange-yellow. Specimens from St. Thomas and the British Virgin Islands are intermediate in this respect, the bill being mainly dusky with a small amount of rose red at the base. Since these differences are constant, it seems desirable to regard the Ground Doves inhabiting this area as belonging to two forms. To the bird from Puerto Rico and the Virgin Islands the name *Columbigallina passerina portoricensis* (Lowe) can be applied, but the bird from the northern Lesser Antilles is apparently left without a name, so I propose to call it

Columbigallina passerina nigrirostris subsp. nov.

Type.—Coll. S. T. Danforth No. 1532, adult male, Canada Hill, St. Kitts, B. W. I., June 22, 1935. Collected by S. T. Danforth.

Subspecific characters.—Similar to *Columbigallina passerina portoricensis* (Lowe), but color of bill entirely dusky, occasionally with a trace of dull orange yellow at the base.

Measurements of type.—Wing 79.0; tail 60.6; culmen from base 15.7; tarsus 16.8; length (in flesh) 173; extent 253.5 millimeters.

Range.—St. Croix and northern Lesser Antilles from St. Martin south probably to Dominica. Specimens examined from St. Croix, St. Martin, St. Eustatius, St. Kitts, Nevis, Barbuda and Antigua.

Remarks.—Although specimens from Guadeloupe and Dominica have not been examined, they are probably referable to this form, as Verrill (Trans. Ct. Acad., 8, 1892, p. 324) remarks that birds from Dominica have a "brown" bill.

Specimens from St. Thomas, St. Jan, and the British Virgin Islands are intermediate, showing much less red at the base of the bill than specimens from Puerto Rico and Culebra, but are best regarded as *portoricensis.*

Any differences in plumage and size between the two forms are so slight as not to be worthy of note. The wings of 28 specimens (regardless of sex) of *portoricensis* measure 76.7—82.8 millimeters (average 79.57); those of 12 specimens of *nigrirostris* measure 74.6—81.4 millimeters (average 78.01).

Material examined:—*Columbigallina passerina portoricensis* 28 specimens (Puerto Rico 14, including 3 from Caja de Muertos; Culebra 3; Cayo Norte 2; St. Thomas 2; St. Jan 2; Jost van Dyke 1; Tortola 2; Beef Island 1; Virgin Gorda 1). *Columbigallina passerina nigrirostris* 12 specimens (St. Croix 2; St. Martin 2; St. Eustatius 1; St. Kitts 3; Nevis 2; Barbuda 1; Antigua 1).

THE PUERTO RICAN FORM OF THE BROAD-WINGED HAWK

By Stuart T. Danforth and J. Adger Smyth.

The Broad-winged Hawk is at present a very rare bird in Puerto Rico, there being no certain record of specimens having been obtained there until now. Therefore the capture of a specimen by one of the writers is of more than ordinary interest, especially as it appears to represent a race hitherto unknown to science, which may be known as

Buteo platypterus brunnescens, subsp. nov.

Type.—Adult female, ovary well developed, coll. S. T. Danforth 1890, collected on El Yunque Mountain, Puerto Rico, August 2, 1935, by J. Adger Smyth.

Subspecific characters.—Darker than any other known form of *B. platypterus.* Smaller than typical *B. p. platypterus;* larger than *B. p. insulicola* or *B. p. rivieri.*

Measurements of type.—Length (in flesh) 387.5; extent 856.2; wing (chord) 264.5; tail 159.0; culmen from cere 20.8; tarsus 56.3 millimeters.

Remarks.—The upper parts in general of the new form are slightly darker than fuscous black. The underparts are tawny olive so heavy barred with mummy brown that the bars are nearly confluent on the throat and breast.

The measurements of some female specimens of Broad-winged Hawks from the Lesser Antilles in the Danforth collection are given for comparison: One female *B. p. insulicola* from Antigua, length (in flesh) 394; extent 849; wing 251.8; tail 151.5; culmen from cere 1915; tarsus 56.4 mm. Two female *B. p. rivieri* from St. Lucia, length in flesh (one) 375; extent (one) 825; wing 246.6–265.8 (256.2); tail 157.9–159.0 (158.4); culmen from cere 18.9–19.3 (19.1); tarsus 54.2–54.6 (54.4). Three female *B. p. antillarum* from Grenada, length (in flesh) 390.0–410.0 (396.6); extent 875.0–919.0 (890.3), wing 260.6–272.6 (267.4); tail 153.8–166.6 (158.9); culmen from cere 19.3–20.5 (19.9); tarsus 54.0–57.0 (55.4) mm.

It might be remarked that from the material at hand *B. p. rivieri* does not appear to be a well marked form, although birds from St. Lucia average somewhat smaller and darker than those from Grenada. No Cuban examples were seen, but Riley (Auk, 1908, p. 271) found

only slight differences in color between *B. p. antillarum* and Cuba birds, noting that the principal difference was in the smaller si of *antillarum*, and could not distinguish it as regards colors fro North American birds. As the present specimen from Puerto Ri is so decidedly darker than any specimens seen from North Americ or the Lesser Antilles, we have no hesitation in describing it as a ne form.